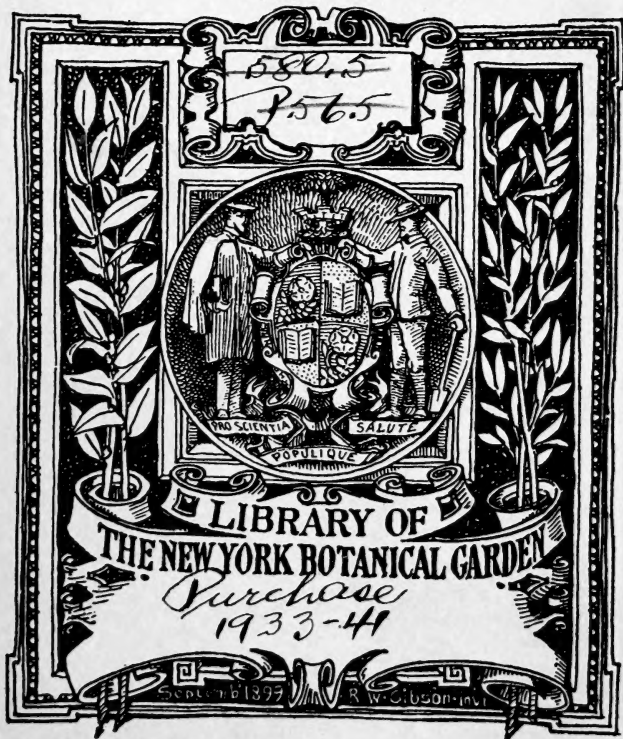


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1933-1941

PHYTOLOGIA

Designed to expedite botanical publication

H. A. Gleason and H. N. Moldenke
New York Botanical Garden, Bronx Park, New York, N.Y.

Announcement

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STUDIES OF NEW AND NOTEWORTHY TROPICAL AMERICAN PLANTS --- I

Harold N. Moldenke

Among the recent plant collections of G. Klug, B. A. Krukoff, A. E. Lawrance, Y. Mexia, and E. J. Valeur in tropical America which have come to the New York Botanical Garden for identification, there have been found a number of new and noteworthy species, some of which will be very briefly discussed on the following pages. The type specimens of all new species herein described are deposited in the herbarium of the New York Botanical Garden. All of the Lawrance plants mentioned hereinafter were collected in the western part of the department of Boyaca, Colombia, 50--100 km. northwest of Bogotá, in 1932.

Langsdorffia hypogaea Mart. -- A number of complete plants collected June 19 in a thin forest, altitude about 1075 m., Lawrance 251. The collector describes this exceedingly scarce plant as 5--8 cm. tall with red non-odorous flowers, and remarks that it is very rare where found.

Celosia argentea var. *linearis* Sw. -- Flowering stems and roots of this very attractive plant collected June 17 in a high forest front, altitude about 2100 m., Lawrance 235. Field notes indicate the plant as about 1 m. tall, with a stem-diameter of 1.5--3 cm. and purple slightly odorous flowers.

Raimondia quinduensis var. *latifolia* R. E. Fries -- Flowering stems collected June 7 in thick forest fringes, altitude about 1075 m., Lawrance 170. It is described by the collector as a shrub 2.5--3 m. tall, with a stem-diameter of about 5.5 cm. and dirty cream-colored non-odorous flowers.

GYNANDROPSIS HIRSUTA sp. nov. Frutex 1--1.5 m. altus; caulibus simplicibus vel paulum furcatis, superne et praesertim ad nodos hirsutis, inferne glabrescentibus; innovationibus dense purpureo-hirsutis; petiolis 1.5--19 cm. longis, summis brevissimis, juventute purpureo-hirsutis, senectute parciore vel sparse hirsutis, apice plerumque persistente hirsuto; foliis trifoliolatis vel summis simplicibus; petiolulis centralibus 2.5--10 mm. longis dense purpureo-hirsutis; petiolulis lateralibus ad 3 mm. longis vel obsoletis; foliolo centrali elliptico 9.5--17 cm. longo, 3--5.2 cm. lato integerrimo acuminato, ad basin longe attenuato vel cuneato, utrinque dense hirsuto (praesertim subtus et juventute), pilis maturis 2--3 mm. longis et 1 mm. dissitis, juventute perspicue purpureis, subtus in costa et venis secundariis densissimis; foliolis lateralibus plusminus

asymmetricis in omnibus aliis notis foliolo centrali consimilibus; paniculis 10--16 cm. longis sparse hirsutis; bracteis ut videtur nullis (vel caducis et cicatricium oppositorum vel suboppositorum paria 20 plusve in rhachide relinquentibus); floribus ut videtur ad terminationem rhachidis 10--20 subremotis laxe patentibus; pedicellis filiformibus ad 2 cm. longis sparse hirsutis; sepalis 4 ovatis ca. 7 mm. longis et ad basin 2.3 mm. latis, ad apicem argute acutis, dorso plusminus carinatis et sparse hirsutis; petalis 4 rubris vel coccineis ovato-ellipticis ca. 9 mm. longis et 5.2 mm. latis obtuse acutis glabris; toro in glandulam longam binariam secundum androphorum positam prolongato; androphoro crasso ca. 12 mm. longo et ad basin 1.3 mm. lato glabro; staminibus 6 apice androphori emergentibus et gynophorum circumvallantibus; filamentis crassis ca. 5 mm. longis glabris; antheris elongatis lineari-oblongis ca. 5.2 mm. longis et 2 mm. latis; gynophoro brevissimo ca. 0.4 mm. longo; ovario oblongo ca. 2 mm. longo, ad apicem truncato; stylo nullo.

Type, Lawrance 73, collected May 18 along the side of a brook in a thick forest, altitude about 1050 m., in the Mt. Chapón region. The species is related to *G. brachycarpa* DC., from which its 3-foliolate leaves and characteristic purple-hirsute pubescence at once separate it. The collector describes the root-system of the type specimen as "very dainty!" Lawrance 233, collected at an altitude of 2100 m. in the Alto Chapón region, June 17, differs from the type only in its much denser and more pronouncedly purple pubescence. Concerning the latter specimen the collector says: "A delightful plant -- would make a fine garden plant."

DIOCLEA PULCHRA sp. nov. Liana alte scandens; ramulis junioribus plusminus dense longeque pilosis vel hirsutis, pilis brunneis; stipulis triangulari-ovatis ca. 8 mm. longis villosis, margine plerumque argute incisis; petiolis 14.5--17.5 cm. longis dense brunneo-villosis; rhachide 4--4.5 cm. supra foliola lateralía producta, petiolo consimili; stipellis subulatis 1.5--2 mm. longis dense villosis; petioulis crassiusculis 8--9 mm. longis dense villosis; foliolo centrali elliptico 13--14 cm. longo 7--8.5 cm. lato asymmetrico, ad basin rotundato, margine integerrimo in siccitate leviter revoluta, ad apicem in cuspidem ca. 1 cm. longam acuminato, supra densiuscule subtus dense strigoso-villosis, venis secundariis utroque latere 10--12 subrectis ad marginem arcuatis subtus valde prominentibus; foliolis lateralibus foliolo centrali consimilibus sed perspicue asymmetricis; inflorescentiis axillaribus singulis validis cernuis ad anthesin ca. 23 cm. longis densifloris, glomerulis florigeris subsessilibus ca. 18 cm. longitudinis racemi possidentibus; calyce firme membranaceo extra breviter piloso intus glabro, tubo ca. 6 mm. longo, lobo superiore late ovato ca. 7 mm.

longo et 10 mm. lato obtuso, dorso selliformi, inferiore anguste ovato vel lanceolato ca. 12 mm. longo acuminato, lobis lateralibus falcato-ovatis ca. 7 mm. longis acutissimis; vexilli limbo ca. 14 mm. longo et 18 mm. lato, ad apicem emarginato, supra basin cartilagineo-incrassato, ad basin valde auriculato, ungue curvato ca. 5 mm. longo et 1.5 mm. lato; alis ovato-oblongis, limbo ca. 14 mm. longo et 10 mm. lato, ad apicem obtuso, ad basin subtruncato in unguem ca. 8 mm. longum cuneato, margine integro; carinae limbo ca. 15 mm. longo et 10 mm. lato, ad apicem profunde 4-lobato, ungue ca. 6 mm. longo; staminibus usque ad 7 mm. monadelphis, supra diadelphis, alternatim longioribus et stylum aequantibus; stylo ca. 20 mm. longo, usque ad 15 mm. longitudinis densissime longeque strigoso-villoso, superne glabro; ovario sessili.

Type, Lawrance 528, collected in a high thick forest, altitude about 925 m., in the El Umbo region, October 12. The plant is described by the collector as a creeper attaining a height of 100--120 feet and a stem-diameter of 2--4 inches, with sticky sap and odorous flowers which are dark heliotrope with a yellow blotch at the top of the throat. The species is a member of the section *Pachylobium* Benth. and is related to *D. coriacea* (Grah.) Rusby and *D. densiflora* Huber. The former differs pronouncedly in its long linear bracts, its mostly glabrous upper leaf-surfaces, and its velutinous-tomentose pubescence on branchlets, peduncles, petioles, and lower leaf-surfaces. The latter differs in its semisagittate stipules, shorter petioles, longer secondary stipules, erect racemes which are flower-bearing almost to the base, and its long linear-subulate and ciliate bracts.

MUCUNA HOLTONI (Kuntze) comb. nov. *Stizolobium Holtoni* Kuntze, Rev. Gen. Pl. 1: 207. 1891. -- Flowering and fruiting stems collected May 13 in impassable thickets of a low forest, altitude about 1075 m., in the Chapón region, Lawrance 44. The collector describes the plant as a creeper 6--10 m. in length, with a stem-diameter of 1.5--3 cm. and yellow non-odorous flowers; "very rare hereabouts." The genus *Mucuna* as recognized by Bentham & Hooker and by Engler & Prantl clearly consists of two distinct genera, as pointed out by David Prain [Journ. As. Soc. Bengal, new series, 66: 404. 1897] and by K. S. Bort [U. S. Dept. Agr. Bur. Pl. Ind. Bull. 141: 31. 1909]. According to these authors, the genus *Mucuna* was first published by Adanson [Fam. Pl. 2: 325. 1763] and the type species is *Mucuna urens* (L.) DC., while the genus *Stizolobium* was first published by Patrick Browne [Hist. Jam. 290. 1756] and the type species is *Stizolobium pruriens* (L.) Pers. The two genera are easily distinguished by the seed. In *Stizolobium* the hilum is linear, elevated, and oblong-crateriform, extending from one-fifth to nearly one-fourth the circumference of the seed, and germination is

not hypogeous. In *Mucuna* [in the restricted sense] the hilum is much elongated and band-like, extending nearly all the way around the seed, and germination is hypogeous. According to these criteria, our species is very plainly a member of *Mucuna*.

Roucheria humiriifolia Planch. -- Flowering stems collected in December, 1929, in a forest at Mishuyacu, near Iquitos, altitude about 100 m., Loreto, Peru, Klug 683. It is described by the collector as a tree 22 m. tall and with orange flowers. The species was known previously from French Guiana.

CASTELARIA GALAPAGEI (Hook. f.) comb. nov. *Castela galapagei* Hook. f., Trans. Linn. Soc. 20: 229. 1851. (1)

ILEX UTILIS sp. nov. Arbor; ramulis glabris; petiolis crassis 11--12 mm. longis glabris in siccitate perrugatis; laminis membranaceis oblongis 8.5--14.5 cm. longis, 3.2--5.5 cm. latis, ad apicem acuminatis, margine fere usque ad basin obtuse dentato vel sinuato in siccitate subrevoluto, ad basin cuneatis, supra glabris nitidisque, subtus glabris obscurisque, venis venulisque utroque prominulis; inflorescentiis glomeratis, glomerulis 4--7-floris; pedicellis crassiusculis ca. 5 mm. longis glabris; calyce subpatelliformi vel peralaxe campanulato incrassato, lobis 4 vel 5 triangularis ca. 0.7 mm. longis et 2 mm. latis integris hyalinis, ad apicem obtusis; corollae albae lobis 4 vel 5 oblongo-vel subobovato-lingulatis ca. 3.8 mm. longis et 2.6 mm. latis, ad apicem rotundatis, ad basin connatis; staminibus 4 vel 5 e sinibus petalorum emergentibus; filamentis crassis ca. 1.3 mm. longis glabris; antheris triangulari-ovatis ca. 1.1 mm. longis et ad basin 1 mm. latis; ovario subgloboso vel ovoideo ca. 2 mm. longo et lato glabro, ad apicem in stigmatem abeunto.

Type, Lawrance 559, collected November 4 in forest fronts, altitude about 1200 m., in the El Umbo region. The species is described by its collector as a tree 20--30 m. tall with a stem-diameter of 1--1.5 m., whose wood is used extensively by the natives in hut construction. It superficially resembles *I. guianensis* (Aubl.) Kuntze, which, however, differs pronouncedly in its more acute leaf-blades whose margins are entire and whose petioles are much shorter and not wrinkled and its pedunculate inflorescences and smaller flowers.

Cissus rhombifolia var. *glabrescens* Planch. -- Flowering and fruiting stems collected June 28 in the Mt. Chapón region, altitude about 1000 m., Lawrance 263. The collector describes the plant as rambling and growing over vegetation horizontally, with its stems 1.5--4 cm. in diameter, "square, ribbed on the top and bottom only and with fins [=wings?] at all 4 edges." This specimen is placed here only tentatively. It does not agree well with any of the identi-

fied specimens of this variety available for comparison, nor with the description of Planchon [in DC. Monog. Phan. 5: 544--546. 1883]. Planchon states "ramis.....non alatis" and "ramulis hirtis," but in our specimen both the branches and the branchlets are very decidedly and conspicuously 4-winged and glabrous. He likewise states "foliolo intermedio rhombeo- vel subrhombeo-ovato v. ovato," but in our specimen the central leaflets are elliptic-oblong, 10--15 cm. long, 4--8.5 cm. wide, rather abruptly long-acuminate at the apex, and rounded at the base, and the two lateral leaflets are likewise elliptic-oblong, somewhat smaller, rather abruptly long-acuminate at the apex, decidedly inequilateral and obliquely rounded at the base. The fruit is oblong-elongate, 10--14 mm. long, 4--5.5 mm. wide, and sharply acute to a mucronate apex. The specimen may very possibly represent an undescribed variety.

VITIS NOVOGRANATENSIS sp. nov. Frutex scandens 10--13 m. longus; ramis 1/2 poll. in diametro; ramulis gracilibus laxe breviterque villosis, pilis mollissimis et irregulariter dispositis; petiolis gracilibus elongatis 4--10 cm. longis plusminus dense villosis praesertim ad apicem; laminis membranaceis oblongo-rotundatis 8.5--15 cm. longis 8--11.8 cm. latis, ad basin cordatis, ad apicem saepe plusminus 3-lobatis, lobo centrali acuminato uno et lobis lateralibus brevibus acuminatis 2, margine irregulariter angulato-dentatis (dentibus mucronatis, quoque dente venam lateralem unam terminante, dentibus majoribus cum venis majoribus occurrentibus), supra glabris vel minute ad costam et venas majores puberulentibus, subtus praesertim secundum costam et venas majores leviter villosopubescentibus; inflorescentiis vel capreolis folia oppositis et subaequantibus; inflorescentiis 10--19 cm. longis plusminus pyramidalipaniculatis ubique dense breviterque villosis, ramulis dense multifloris subremotis; pedunculis gracilibus 6--8 cm. longis sparse breviterque villosis vel subglabratibus, capreolum non-furcatum unum 4--6 cm. supra basin gerentibus; pedicellis gracillimis ca. 1 mm. longis villosis; floribus viridentibus suaveolentibus; calyce parvissimo plusminus patelliformi ca. 1 mm. in diametro et 0.4 mm. longo glabro, margine subtruncato vel irregulariter undulato; disco plano ca. 0.8 mm. in diametro; corolla glabra, petalis 5 praeter basin coherentibus ca. 2 mm. longis, apicibus petalorum involutis ut corolla calyptroides, deorsum visa, habitum 4-umbonatum assumat, a disco sub anthesi decidua, petalis tum ad 2/3 longitudinis fissis et senectute partibus libris extrinsecus volventibus; staminibus 5 aequalibus in discum insertis; basibus filamentorum filiformium hyalinorum ca. 0.8 mm. longorum stricte in canaliculos ovarii adpressis; antheris ovato-ellipticis prope basin percordatam amplissimis, ad apicem emarginatis, ca. 0.5 mm. longis et 0.3 mm.

latis 2-locularibus; ovario subgloboso plusminus tetragono ca. 0.7 mm. longo et lato 4-lobato glabro; stylo brevissimo crasso ca. 0.5 mm. longo truncato-conico glabro plusminus striato; stigmatibus terminali ca. 0.2 mm. lato levi.

Type, Lawrance 162, collected June 6 at the edge of a thick low forest, altitude about 1075 m., in the central Chapón region. The species seems to be related to the North American *V. cordifolia* Michx. and possibly *V. aestivalis* Michx. It is quite distinct from the common tropical American *V. tiliaefolia* H. & B. and *V. caribaea* DC., which differ pronouncedly in pubescence, leaf-shape, and general habit, but most especially in the character and abundance of the pubescence on the leaves.

TRIUMFETTA BOYACANA sp. nov. Frutex 3 m. altus; ramulis et sarmentis teretibus dense (praesertim in innovationibus) breviterque tomentosis, pilis fuscis; petiolis gracilibus 1.5--4 cm. longis dense breviterque tomentosis; laminis ovatis supra atroviridis, subtus pallidioribus, 8--12 cm. longis 4.5--6.5 cm. latis, ad apicem acuminatis, ad basin rotundatis, secundum marginem copiose et irregulariter glanduloso-dentatis, ima basi glandulis magnis sessilibus 4--6 ornatis, supra densiuscule stellatis praesertim ad costam et venas secundarias, subtus densissime stellato-tomentosis; venis secundariis 4 (magnis 2 et parvis 2) e basi folii orientibus, aliis 6 vel 8 e parte $\frac{2}{3}$ superiori costae in paribus approximatis divergentibus, arcuatis ad marginem anastomosantibus; venis tertiariis multis subrectis et subparallelis; paniculis terminalibus ad 10 cm. longis brachiatis subaxe multifloris ubique dense tomentosis; bracteis foliaceis linearibus vel oblongis vel angusto-ellipticis breve stipitatis 3.5--6.4 cm. longis 4--19 mm. latis, foliis consimilibus; pedicellis gracilibus 2--4 mm. longis dense tomentosis; sepalis 5 elongato-linearibus, ad basin et apicem ampliatis, petala paulum excedentibus ca. 13 mm. longis ad basin ca. 2.6 mm. latis, ad medium ca. 1.5 mm. latis et prope apicem ca. 2 mm. latis, ad apicem obtuse acutis et pericucullatis, dorso dente erecto subapicali plusminus 0.7 mm. longo ornatis, extra sparse villosis, intus glabris; petalis 5 flavis spathulatis venosis ca. 11.5 mm. longis, e basi conspicuiter papilliformi et longissime pilosa emergentibus, prope basin ca. 1.5 mm. latis, in 5 mm. sequentibus longitudinis ad 2 mm. ampliatis, tum ad ca. 5 mm. abrupte ampliatis, ad apicem rotundatis et subcrenatis, praeter basin glabris; staminibus ca. 30; filamentis filiformibus 8--9.3 mm. longis glabris; antheris oblongis flavis ca. 1 mm. longis et 0.5 mm. latis, ad basin et apicem emarginatis, dorsifixis; pistillo stamina et lobos perianthi paulum excedente; stylo crasso ca. 13 mm. longo glabro; lobis stigmatibus 5-lobatis 0.2 mm. longis; ovario subgloboso ca. 1.3 mm. longo et lato dense tomentoso 4-sulcato ut videtur 4-locu-

lari; ovulis 2 in quoque loculo.

Type, Lawrance 7, collected May 7 in an open forest, altitude about 1200 m., in the Chapón region. The species is apparently related to *T. althaeoides* Lam. and *T. semitriloba* L., but differs in its pubescence and much larger flowers. Its collector states that it is "rare where found" and that its flowers are not odorous. In the size of its flowers it approaches *T. mollissima* H.B.K., but in the latter the pubescence and leaf-shape are entirely different.

PARATHESIS RUBELLA sp. nov. Frutex 5--6 m. altus; hornotinis crassiusculis dense puberulentibus glabrescentibus; petiolis crassis 18--25 mm. longis inconspicue breviterque subalatis minutissime puberulentibus glabrescentibus; lamina leviter membranaceis oblongis ca. 25 cm. longis, 9.5--11 cm. latis, ad basin subacuminatis, margine integris, ad apicem perspicue acuminatis, supra glabris subnitidis, subtus dense glanduloso-punctatis et costa prominente nervisque secundariis numerosis parce breviterque pilosis; inflorescentiis terminalibus multifloris pyramidato-paniculatis ca. 10 cm. latis parce puberulentibus; pedunculis crassiusculis ca. 7 cm. longis; rachide florifero ca. 9 cm. longo; pedicellis gracilibus 4--5 mm. longis glanduloso-puberulentibus; sepalis 5 angusto-triangularibus ca. 1 mm. longis, ad basin ca. 0.3 mm. latis, ad apicem argute acutis, glanduloso-puberulentibus; corolla rubella 5--5.3 mm. longa, tubo 1 mm. longo, lobis 5 triangulato-ovatis 4--4.3 mm. longis, ad basin ca. 1.8 mm. latis, ad apicem acutis, utrinque dense pubescentibus et lineolis purpureis parallelis punctisque paucis pictis, senectute recurvis; staminibus 5 ad imam basin tubae corollae insertis; filamentis maturis ca. 2.8 mm. longis glabris; antheris ovatis acutis 0.8--0.9 mm. longis, ad basin ca. 0.7 mm. latis, dorso punctis 1--4 nigris pictis; stylo crasso ca. 3.8 mm. longo plusminus piloso praesertim ad basin; stigmatibus punctiformibus; ovario ovoideo infra glabrato, supra parce piloso; ovulis paucis summis in placentam discoideam immersis.

Type, Lawrance 372, collected July 31 in a high thick forest along the side of a stream in the Mt. Chapón region. The flowers are described by the collector as pink and the plant as very beautiful. It is apparently related to *P. Eggersiana* Mez from Ecuador and *P. serrulata* (Sw.) Mez from Mexico and the West Indies to northern South America. The former differs in its densely ferruginous-villose pubescence, its smaller and coarsely crenate leaf-blades which are densely ferruginous-tomentose on the midrib and margins and otherwise densely pilose beneath, and its sepals being rounded at the apex and villose along the margins. The latter differs in its ferruginous-lepidote branchlets, its lepidote lower leaf-surfaces, its smaller leaf-blades and flowers, its petals being narrowly rounded at the apex and only

slightly punctate, and its more densely ferruginous-tomentellous pubescence in the inflorescence.

Stylogyne sp. -- Fruiting stems collected June 14 in shade on the south front of a precipice, altitude about 1050 m., in the Chapón region, Lawrance 220. It is described by its collector as a very attractive shrub 2--3 m. tall and said to be "worth propagating." This probably represents a new species, but since no flowers are available, it has been thought best not to describe it as such. The leaves are much like those of *S. micans* Mez, only in our plant they are much larger, being to 31.4 cm. long and 12.8 cm. wide, abruptly short-acuminate at the apex, revolute along the margins, attenuate into the extremely short and stout petiole, and beautifully reticulate-veined. The inflorescence is about one-half as long as the subtending leaves and appears to be terminal, its branches being thick and glabrate. The fruits are borne in subumbellate clusters, on pedicels which are very slender and 7--11 mm. in length.

WEIGELTIA LAWRENCEI sp. nov. Frutex 2.3 m. altus; ramulis et sarmentis gracilibus glabris; petiolis gracilibus 7--10 mm. longis glabris sublate alatis; laminis tenuiter membranaceis vel chartaceis oblongis 9--12 cm. longis 2.7--4.5 cm. latis argute acuminatis, ad basin acuminatis vel tuncatis, margine superne remote dentato, dentibus latis obtusis 4--6 (acuminatione ipsa integra et saepe subcurva), utrinque glabris, subtus dense punctulatis; venatione gracili et venusta; venis secundariis utrinquesecus 6 vel 7, subtus 3--6 mm. a margine conspicuiter anastomosantibus; paniculis axillaribus solitariis numerosis ca. 6 cm. longis rectis, ramulis lateralibus 6 vel 7 brevibus 4--5-floris; pedunculis gracilibus 10--14 mm. longis glabris; rhachide gracili, pedunculo consimili, plerumque minutissime puberulente; pedicellis filiformibus ca. 1.5 mm. longis puberulentibus; lobis calycis 4-partiti ca. 1.5 mm. in diametro patelliformis ovatis ca. 0.7 mm. longis et ad basin 0.5 mm. latis obtuse acutis glabris; lobis corollae 4-partitae ca. 5 mm. in diametro virido-albae ovatis ca. 1.5 mm. longis et latis patentibus et plusminus reflexis obtusissimis, margine scarioso, in loco medio dense papillosis et granulosis; staminibus 4 rectis in centro basis loborum corollae insertis; filamentis ca. 1 mm. longis glabris; antheris late ovatis vel triangulatis ca. 0.5 mm. longis et latis ad basin bilobatis 2-locularibus; ovario non viso.

Type, Lawrance 32, collected May 9 in a thick forest, altitude about 1075 m., in the Mt. Chapón region. The flowers are said by the collector to possess no odor. The species is apparently a member of the subgenus *Euweigeltia* Mez and related to *W. bogotensis* Mez, which differs in its ferruginous-tomentellous branchlets, longer petioles, larger leaves with very conspicuously lighter margins, and larger inflor-

escences which surpass the leaves.

Echites microcalyx A. DC. -- Flowering stems collected May 13 in impassable thickets of a low forest, altitude about 1100 m., Lawrance 51. The collector describes the plant as a creeper 3--6 m. in length, with a stem-diameter of 0.4--0.9 cm. and yellow non-odorous flowers. The leaves on our plant are less pubescent than is ordinarily seen in this species, but in all other respects it agrees well with typical material.

Odontadenia sp. -- Flowering stems and one fruit collected June 8 in thick forest fringes, altitude about 900 m., Lawrance 182. Field notes indicate the plant as a creeper 12--15 m. in length, with flat stems 1.5--3 cm. in diameter and very pretty slightly odorous pink flowers which are fringed with heliotrope. This may represent a new species since it does not match any of the available herbarium material at this institution nor does it agree well with any published description. The stems are bi-alate and glabrous; leaves opposite; petioles elongate, 6--7.5 cm. long, glabrous; blades broadly rotund, to 12 cm. long and 10.5 cm. wide, rounded to an acuminate apex (the acumination being about 15 mm. long), entire, very deeply cordate at base, glabrous above, very lightly puberulent or subglabrate beneath; inflorescence to 28 cm. long; peduncles 6--7 cm. long; pedicels slender, 2.5 cm. long; calyx about 4 mm. long and 6 mm. wide; corolla-tube to 5 mm. long, 1.5 mm. wide at the apex.

FISCHERIA VIRIDIS sp. nov. Frutex scandens; ramis et ramulis crassis fistulatis dense brevissimeque furfuraceo-pubescentibus, pilis brunneis, et sparsim setosis, setis multicellularis usque ad 4 mm. longis; petiolis crassis 1--2 cm. longis dense brunneo-furfuraceis et plusminus setosis; laminis firme membranaceis oblongo-ellipticis 10--12 cm. longis, 5--6.5 cm. latis, ad apicem in caudam 1 cm. longam acuminatis, margine integerrimis in siccitate plusminus revolutis, ad basin cordatis vel subauriculatis, supra dense subtus densissime strigoso-setosis, pilis brevibus ad basin tumidis; costa venisque secundariis (utroque 6 vel 7) et reticulo venulorum subtus insigniter perspicuis et densissime brunneo-furfuraceis; cymis multifloris foliam subtendentam subaequantibus vel paullo brevioribus; pedunculo crasso 2--7.5 cm. longo dense brunneo-furfuraceo et sparsim setoso; pedicellis crassiusculis 1--3.5 cm. longis in pubescentia pedunculo consimilibus; calycis segmentis lanceolatis ca. 6 mm. longis ad basin ca. 1.6 mm. latis in apicem acutam vel subacuminatam longe attenuatis, reflexis, dorso dense granuloso-pubescentibus et sparsim longeque setosis, intus glabris; corolla campanulata viridi usque supra basin 5-partita, lobis subovato-oblongis ca. 18 mm. longis et 6.5 mm. latis, ad apicem acutam angustatis, margine e medio ad

apicem duo latere valde crispis, perspicue reticulato-venosis, extra parce pilosis, pilis brevissimis ad basin tumidis, intus glabris; corona exteriori basi corollae arcte adnatis, lobis 1--1.5 mm. longis et latis carnosis crispis glabris; coronae interioris foliolis carnosis, dorso antherarum adnatis, apice ampliatis cucullatisque, summis incrassatis bullato-subpapillois, antice in rostrum porrectum productis; antheris curvatis, appendicibus hyalinis ca. 0.7 mm. summam antheris excedentibus; pollinibus ca. 1.3 mm. latis, translatoribus perbrevis, retinaculo rhomboideo brunneo ca. 0.42 mm. longo, massis pollinibus late obtuseque rotundo-lingulatis ca. 0.7 mm. longis et (ad apicem) latis; stigmatibus ca. 2.6 mm. in diametro.

Type, Lawrance 396, collected August 8 in high forest fronts in the upper Chapón region. It is described by its collector as a creeper 75--100 feet in height, with a stem-diameter of 1/2--1 inch and inodorous green flowers which are mottled with tiger-like stripes of moss-green. The species is very closely related to *F. columbiana* Schultr. The latter, however, differs in the following respects: (1) its pubescence throughout (exclusive of the setae) is much finer and shorter granulose-velutinous-puberulent, (2) its branches and branchlets are "filiform", (3) its leaf-bases are merely "subcordate", (4) the secondary veins are 10--12 in number on each side of the midrib and arranged close together, (5) the cymes exceed the leaves in length, (6) the pedicels are slender and only to 2 cm. long, (7) the calyx-segments are oblong-lanceolate, to 4 mm. long, patent, and obtuse at the apex, (8) the corolla is subrotate, (9) the corolla-lobes are only to 7 mm. long, crisped on only one side and only to just below the apex, and densely puberulent within, (10) the exterior corona is annular and puberulent, and (11) the retinaculum is many times shorter than the pollen-masses.

Ipomoea cardiosepala Meisn. -- Flowering stems collected June 7 at the fringe of a thick forest, altitude about 1100 m., Lawrance 167. The plant is described by the collector as a creeper 6--12 m. in length, with a stem-diameter of 0.7--1.5 cm. and deep pink non-odorous flowers; "very scarce hereabouts." The species was known hitherto from British Guiana. The sepals in our specimen are exceptionally long-ciliate and the leaves larger than any hitherto seen.

Ipomoea denticulata (Desr.) Choisy -- Flowering stems collected May 17 in a thin forest, altitude about 1200 m., Lawrance 59. The plant is described by its collector as a vine about 1 m. in length, with a stem-diameter of 0.8 cm. and white non-odorous flowers with a purple throat. Our specimen is much more pubescent on the stems, petioles, blades, peduncles, and sepals than is usually seen in this

species, but agrees well in all other respects.

Ipomoea Nil (L.) Roth -- Flowering and fruiting stems collected June 9 in open spaces in fringes of a forest, altitude about 1100 m., in the Chapón region, Lawrence 193. Field notes indicate the plant as a rambling creeper with a stem-diameter of about 4 mm. and pretty deep heliotrope non-odorous flowers. Our plant is remarkable in having entire and unlobed leaf-blades, beautifully rounded to an acuminate apex and deeply cordate at the base. The characteristic narrowly-elongate sepals and the characters of the corolla and of the pubescence on the stems and leaves, however, leave no doubt as to the identity of this plant.

TASSADIA APOCYNELLA Gleason & Moldenke, sp. nov. Frutex scandens; ramis gracilibus striatis parce puberulis; ramulis gracilibus dense puberulis; petiolis pergracilibus 5--11 mm. longis minute puberulis vel subglabris; laminis oblongo-ellipticis supra mediam amplissimis 4.7--6.3 cm. longis, 2.1--3 cm. latis, ad apicem acuminatis et in cuspidem ca. 3 mm. longam prolongatis, margine integris in siccitate valde revolutis, ad basin cuneatis, supra minutissime puberulis vel glabris, subtus glabris punctatisque; inflorescentiis paniculatis ramulos axillares 2--0-foliatos terminantibus, umbellis sessilibus 3--8-floris; rhachide et ramulis floriferis dense puberulis; pedicellis pergracilibus 2--3 mm. longis puberulis; sepalis ovato-oblongis ca. 1 mm. longis et 0.5 mm. latis, ad apicem acutis vel subacutis, margine tenuibus scariosisque, tantummodo ad basin connatis, dorso pilosis; corolla ante anthesin suburceolata ad anthesin campanulata, tubo ca. 1.6 mm. longo, lobis ovato-lanceolatis ca. 1.8 mm. longis et 0.7 mm. latis valde recurvatis vel circinatis dense pilosis, ad apicem obtusis vel subacutis; coronae lobis ex parte latissima gynostegii emergentibus semicircularibus ca. 0.5 mm. longis et latis glabris, ut videtur simplicibus, ad apicem subacutis; gynostegio pyri-formi ca. 1.3 mm. longo et lato; stigmatibus vix convexo ca. 0.35 mm. lato; antherarum appendicibus hyalinis truncato-triangularibus ca. 0.1 mm. longis; pollinibus ca. 0.2 mm. latis; corpusculo lineari-oblongo ca. 0.15 mm. longo brunneo; massis pollinis anguste obovoideis ca. 0.15 mm. longis; caudiculis curvatis.

Type, Lawrence 584, collected November 13 in forest fringes along a brookside, altitude about 1100 m., in the El Umbo region. The plant is described by its collector as a creeper 15--20 feet long, with a stem-diameter of 1/4--1/2 inch and slightly odorous pale yellow star-shaped flowers. It is closely related to *T. recurva* Rusby, which, however, differs in its leaf-blades being widest at or below the middle, more or less pubescent-pilose above, especially when immature, and non-punctate beneath, its longer and denser pubescence on branchlets, petioles, rachis, and ped-

icels, its calyx-lobes equaling or somewhat exceeding the corolla-tube, and other more minute characters of the floral parts.

CERDANA GERASACANTHUS (L.) comb. nov. *Cordia Gerasacanthus* L. Syst., ed. 10, 936. 1759. — Collected March 28—30, 1920, in the vicinity of Montego Bay, Jamaica, W. R. Maxon & E. P. Killip 1441.

Varronia guianensis Desv. — Flowering stems collected May 25 in a thick forest, altitude about 1200 m., Lawrance 117. It is described by its collector as a shrub about 2 m. tall, with a stem-diameter of 3—6 cm. and greenish-white non-odorous flowers. The species was known previously from British Guiana.

LYCIANTHES NOVOGRANATENSIS sp. nov. Frutex scandens; ramis et ramulis glabratiss vel parvis pilosis brunneis, innovationibus et interdum senectute ad nodos plusminus setosis, pilis simplicibus vel furcatis; petiolis 2—11 mm. longis glabratiss; laminis subchartaceis oblongo-ellipticis 6.3—12.2 cm. longis 3.7—6.2 cm. latis ad apicem acuminatis, margine integris in siccitate subrevolutis, ad basin inaequaliter acutis, supra nitidis et in siccitate nigrescentibus glabris, subtus pallidioribus viridibus glabratiss vel ad costam et venas secundarias parvis setosis; venis secundariis utroque 4—7 utrinque prominulis, venulorum reticulo subtus insigniter perspicuo sed non elevato; pedicellis 7—25 mm. longis, sub fructu incrassatis; calyce campanulato ca. 7 mm. longo et 9 mm. lato parce piloso, margine scarioso erosotruncato, dentibus 10 linearibus inter se 2.5—6 mm. in longitudine variis constanter 0.7—1 mm. latis ad apicem obtusis, ca. 2 mm. infra marginem calycis abeuntibus; corolla campanulata alba, tubo ca. 2.5 mm. longo, lobis 5 lanceolatis ca. 2 cm. longis et 4.5 mm. latis ad apicem subacutis, fere usque ad apicem membranulis subhyalinis interpetalariis glabris conjunctis; staminibus ad oram tubae corollae insertis aequalibus; filamentis crassis aequilongis ca. 1.5 mm. longis; antheris ovatis ca. 7.5 mm. longis, ad basin 3 mm. latis et cordatis, ad apicem attenuatis, poris minutis apicalibus; stylo ca. 13 mm. longo; stigma obtuse capitato; ovario ovato ca. 2.8 mm. longo et ad basin 2.5 mm. lato glabro; calyce fructifero indurato ca. 5 mm. longo et 15 mm. lato, dentibus ad 11 mm. longis.

Type, Lawrance 478, collected in forest fringes at a streamside, altitude about 1100 m., in the El Umbo region. The plant is described by its collector as a woody vine 6—10 feet in height, with a stem-diameter of 1/3 inch and pure white slightly odorous flowers whose stamens are cream-colored. He reports further that the species flowers only at night. Lawrance 362 is a fruiting specimen from the Mt. Chapón region and is described as a vine attaining a height of 20—30 feet and a stem-diameter of 1/4—1 inch. It was

collected in a thin low forest at an altitude of about 1200 m. The species is apparently a member of the subgenus *Polymeris* (Dun.) Bitt.

Mendoncia Lindavii Rusby — Flowering stems collected May 18 in an open forest, altitude about 1100 m., Lawrence 69. Field notes indicate the plant as a creeper 6--9 m. in length, with a stem-diameter of 1--2.5 cm. and red non-odorous flowers. The species was known previously from Bolivia.

CITHAREXYLUM FRUTICOSUM var. *SUBSERRATUM* (Sw.) stat. nov. *Citharexylum subserratum* Sw. Prod. Veg. Ind. Occ. 91. 1788.

CITHAREXYLUM INTEGERRIMUM (Kuntze) stat. nov. *Citharexylum villosum* var. *integerrimum* Kuntze, Rev. Gen. Pl. 2: 504. 1891.

CITHAREXYLUM MONTEVIDENSE (Spreng.) comb. nov. *Ehretia montevidensis* Spreng. Syst. 1: 647. 1825.

CITHAREXYLUM RIGIDUM (Briq.) stat. nov. *Citharexylum myrianthum* var. *rigidum* Briq., Ann. Conserv. & Jard. Bot. Genève 7-8: 317. 1904. -- Although the binomial *Citharexylum rigidum* appears in the article by Briquet cited above, it appears there merely as a herbarium name given in synonymy. It has therefore not been validly published hitherto.

Citharexylum fruticosum var. *villosum* (Jacq.) O. E. Schulz — Fruiting specimens collected May 30, 1931, in a semi-arid pine region at Monción, altitude 300--400 m., district of Monción, province of Monte Cristi, Dominican Republic, Valeur 662. Field notes indicate the plant as a tree with white fruit and record the vernacular name "penda." This collection is a splendid example of the typical form of this variety.

Lantana Chamissonis (D. Dietr.) Benth. & Hook. -- Flowering specimens collected March 15 and 17, 1930, at the edge of and in openings in cut-over woods, altitude 650--700 m., on Agricultural Hill of the Agricultural College lands and near the boundary of Sha-Sha Valley, Vigosa, state of Minas Geraes, Brazil, Mexia 4468a and 4474. The plant is described by its collector as a shrub 1--1 1/2 m. tall, with flowers either white or red to orange and leaves with a verbena-like odor, and is said to be so abundant as to be a feature in the landscape. She reports the vernacular name "cambará."

Petrea Schomburgkiana Schau. -- Flowering specimens collected in December, 1931, in an old clearing in the Machado River region, state of Matto Grosso, Brazil, Krukoff 1575. Field notes describe the plant as a woody vine.

Vitex cymosa Bert. -- Flowering specimens collected in September, 1931, on varzia land near Cassipa, Tapajos River region, state of Pará, Brazil, Krukoff 1259. The plant is described by its collector as a tree 10 m. tall, with a stem-diameter of about 22 cm. at 1.5 m. from the base; vern-

acular name, "taruma." -- Fruiting specimens collected in December, 1931, on varzia land along a river shore near Tabajaza in the upper Machado River region, state of Matto Grosso, Brazil, Krukoff 1472. It is described as a tree 25 m. tall and 6 dm. in diameter at 1.5 m. from the base, with violet flowers and the vernacular name "taruman."

Monographic studies of the genus *Bouchea*, carried out by the present writer during the past year with the cooperation and assistance of botanical institutions in America and in Europe, have convinced him of the correctness of the conclusions advanced by Myrle Grenzsbach in her excellent treatise on this group [Ann. Mo. Bot. Gard. 13: 80--100. 1926] in regard to the distinctness of the South African genus *Chascanum* from the genus *Bouchea*. This matter will be discussed in detail in the present writer's forthcoming monograph of the latter genus. In the meantime, it has been found necessary to publish the following new binomials:

BOUCHEA BOLIVIANA (Kuntze) comb. nov. *Valerianodes boliviana* Kuntze, Rev. Gen. Pl. 3: 254. 1898.

CHASCANUM INCISUM (Pearson) comb. nov. *Bouchea incisa* Pearson, Trans. S. Afr. Phil. Soc. 15: 180. 1904.

CHASCANUM INTEGRIFOLIUM (Pearson) comb. nov. *Bouchea integrifolia* Pearson, Trans. S. Afr. Phil. Soc. 15: 179. 1904.

CHASCANUM KROOKII (Guerke) comb. nov. *Bouchea Krookii* Guerke, Ann. Nat. Hofmus. 20: 45. 1905.

CHASCANUM LATIFOLIUM (Harv.) comb. nov. *Bouchea latifolia* Harv. Thes. Cap. 2: 57. 1863.

CHASCANUM LONGIPETALUM (Pearson) comb. nov. *Bouchea longipetala* Pearson in Thiselton-Dyer, Fl. Cap. 5: 199. 1901.

CHASCANUM NAMAQUANUM (Bolus) comb. nov. *Bouchea namaquana* Bolus ex Pearson in Thiselton-Dyer, Fl. Cap. 5: 204. 1901.

CHASCANUM SCHLECHTERI (Guerke) comb. nov. *Bouchea Schlechteri* Guerke, Notiz. K. Bot. Gart. Berlin 3: 75. 1900.

CHASCANUM SESSILIFOLIUM (Vatke) comb. nov. *Bouchea sessilifolia* Vatke, Linnaea 43: 529. 1882.

CHASCANUM WILMSII (Guerke) comb. nov. *Bouchea Wilmsii* Guerke, Notiz. K. Bot. Gart. Berlin 3: 74. 1900.

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(1) For discussion of the genus *Castelaria* and the related genus *Neocastela* [Castela] see Small in N. Am. Fl. 25: 227 and 230. 1911.

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The New York Botanical Garden

A NEW SPECIES OF MASCAGNIA FROM COLOMBIA

C. V. Morton and Harold N. Moldenke

MASCAGNIA DISSIMILIS sp. nov. Subg. *Mesogynixa*, ser. *Zygandra*. Liana alte scandens; rami crassi, aetate glabri, paullum angulati, grisei, internodiis longis, lenticellis nullis; lamina foliorum oblonga, ca. 20 cm. longa, 8 cm. lata, basi rotundata, apice abrupte et breviter acuminata (ca. 1.5 cm.), coriacea, utrinque pallido-viridis, glabra, margine integra perspicue cartilagineo-incrassata, eglandulifera, nervis primariis 7 vel 8 supra obscuris, subtus prominentibus arcuatis infra marginem anastomosantibus, nervis secundariis tertiariisque supra obscuris, subtus prominulis reticulatis; petiolus crassus, ca. 1.5 cm. longus, 3 mm. diametro, glaber, supra valide canaliculatus, eglanduliferus; inflorescentia paniculata axillaris, ca. 11 cm. longa, pedunculo ca. 4 cm. longo compresso glabro, pedunculis racemorum usque ad 13 mm. longis puberulis, pedunculis floriferis usque ad 3 mm. longis puberulis, pedicellis ca. 12 mm. longis tenuibus puberulis, apice leviter incrassatis; flores desunt; sepala glandulifera; samarae glabrae; nux ovoidea, ca. 5 mm. longa, areola ventrali ovata, ca. 4 mm. longa, 3 mm. lata; ala lateralis basi continua, apice emarginata, 18--22 mm. alta, ca. 25 mm. lata, hyalina, membranacea, nervis prominulis; ala dorsalis semi-oblonga, 3--9 mm. longa, nucem multo superans; alae intermediae nullae.

Type, A. E. Lawrance 546, collected October 21, 1932, at El Umbo, altitude 950 m., Boyacá, about 130 miles north of Bogotá, Colombia, and deposited in the herbarium of the New York Botanical Garden.

The present species is most closely related to *M. nervosa* Niedenzu, but differs as indicated in the following key:

- Leaves oblong, about 20 cm. long, the margins conspicuously cartilaginous, the secondary nerves obscure above; branches and petioles very thick; nut glabrous, the ventral areole about 4 mm. long and 3 mm. broad.....
.....*M. dissimilis*.
- Leaves ovate, up to 15 cm. long (usually less), the margins not cartilaginous, the secondary nerves conspicuously reticulate above; branches and petioles slender; nut usually puberulous, the ventral areole about 3 mm. long and 2 mm. broad.....*M. nervosa*.

THREE NEW SPECIES FROM THE A. E. LAWRENCE COLLECTION

Albert C. Smith

The specimens hereinafter described were collected by A. E. Lawrence in 1932 in the western part of Boyacá, 50--100 km. northwest of Bogotá, Colombia, and the types are deposited in the herbarium of the New York Botanical Garden.

PSITTACANTHUS DILATATUS sp. nov. Frutex parasiticus glaber; ramis ramulisque crassis teretibus, maturitate rugosis fuscescentibus, ad nodos conspicue incrassatis continuis; petiolis incrassatis nigrescentibus rugosis 4--8 mm. longis, superne anguste alatis; laminis coriaceis viridibus oblongis, 9--14 cm. longis, 3--5.5 cm. latis, basi attenuatis, apice rotundatis, margine integris, utrinque dense stomatiferis, pinnatinerviis, costa crassa utrinque prominente, nervis secundariis 4 vel 5 in quoque latere adscendentibus, utrinque elevatis; inflorescentiis 2--5 in axillis foliorum, plerumque 4-floris, floribus binis; ramulis inflorescentiae stramineis subrugosis, pedunculo primario ca. 6 mm. longo, pedunculis secundariis 2--4 mm. longis, bracteis parvis; pedicellis 2--4 mm. longis; cupula patelliformi submembranacea margine integra apice 2--3 mm. diametro; calyculo carnosio cylindrico apice crenato-serrato, sub anthesi 4--5 mm. longo et 2.5 mm. diametro; perigonio carnosio coccineo distaliter luteo, maturitate 3.5 cm. longo, ad medium 1.5--2.5 mm. diametro, basi conspicue dilatato, saepe ad basin 6-lobato, lobis linearibus recurvatis, ca. 1.6 mm. latis, 3 mm. supra basin intus ligulas submembranaceas deltoideas ca. 1.5 mm. longas gerentibus, apice subacutis, margine ventrali minute hamulosis; filamentis carnosis ca. 12 mm. longis, prope medium perigonii adfixis, apice gracilibus; antheris dorsifixis, oblongis, 3--4 mm. longis, apice productis et obtusis; stylo perigonium aequante, stigmatibus ellipsoideo papilloso.

Type, Lawrence 108, collected May 24 in a dense tropical forest, altitude about 1200 m., in the Mt. Chapón region. It is a species related to the Amazonian *P. biternatus* (Hoffmegg.) Blume, from which it differs by having the leaves larger and attenuate rather than obtuse at the base, the flowers in pairs rather than ternate, and the perigonium glabrous rather than cinereous-pulverulent.

SECURIDACA CRISTATA sp. nov. Frutex scandens; ramis ramulisque teretibus glabris vel juventute pilosulis; petiolis rugosis canaliculatis mox glabris 6--9 mm. longis; laminis papyraceis viridibus glabris oblongis vel ovato-oblongis, 10--20 cm. longis, 7--11 cm. latis, basi subcordatis vel ro-

tundatis, apice breviter acuminatis (apice ipso obtuso), margine integris et leviter revolutis, costa supra impressa subtus prominente, nervis lateralibus primariis 5--7 in quoque latere arcuato-adscendentibus utrinque leviter elevatis, venulis reticulatis utrinque prominulis; inflorescentiis racemosis, rhachidibus 1 vel 2 in axillis foliorum 8--15 mm. longis minute puberulis, pedicellis mox glabris gracilibus 4--7 mm. longis, bracteis deciduis pilosis acutis 1.5 mm. longis subtentis; sepalis 3 exterioribus deltoideo-ovatis 3 mm. longis et latis, utrinque minute puberulis, margine membranaceis; sepalis 2 interioribus membranaceis multinerviis oblongo-orbicularibus, ca. 7 mm. longis et latis, glabris vel margine ciliatis, apice rotundatis vel emarginatis, unguiculo angusto; carina cucullata glabra ecristata 7 mm. longa, basi subito angustata; petalis superioribus spathulato-oblongis 7 mm. longis, intus basi pilosulis; filamentis prope ad apices connatis, tubo intus piloso, antheris oblongis 0.8 mm. longis; ovario glabro anguste alato, stylo superne curvato; fructo sublignoso, absque ala subgloboso 22--25 mm. diametro, conspicue reticulato-venoso, ala obliqua unilateralis, ca. 20 mm. longa et basi 20 mm. lata, venis elevatis parallelis striata.

Type, Lawrance 174, collected June 7 on edge of a high forest in the Mt. Chapón region. The type bears flowers which are said to be yellow. Lawrance 259 is another collection from the same locality, of which the fruits are above described. It is a species closely related to the Amazonian *S. Corytholobium* A. W. Benn., from which it differs by having the inflorescence racemose rather than subfasciculate, the pedicels only about one-third as large, and the filaments more highly connate. The fruit of the new species is more decidedly globose and bears a larger spur than that of *S. Corytholobium*. In leaf character, *S. cristata* has the base subcordate or rounded rather than subacute, the apex short-acuminate rather than merely acute, and the costa impressed rather than plane.

ESCHWEILERA SESSILIS sp. nov. Arbor pulchra glaberrima 18--25 m. alta, trunco ad 1 m. diametro; ramulis cinereis subteretibus striatis versus apices lenticellatis; petiolis crassis nigrescentibus rugosis canaliculatis 5--8 mm. longis; laminis rigide coriaceis viridibus opacis oblongis vel ovato-oblongis, 8--11 cm. longis, 3--5 cm. latis, basi acutis, apice breviter acuminatis (apice ipso obtusis), margine cartilagineis et obsolete serrulatis, utrinque parce punctato-granulosis, pinnatinerviis, costa crassa utrinque prominente, nervis lateralibus primariis 8--10 in quoque latere arcuato-adscendentibus prope marginem anastomosantibus, venulis copiosissime reticulatis utrinque elevatis; racemis axillaribus vel terminalibus saepe paniculas simulantibus; rhachidibus angulatis vel subteretibus lenticella-

tis 2--8 cm. longis 6--20-floris; floribus majusculis subsessilibus, pedicellis crassis ad 1 mm. longis; hypanthio carnosio rugoso dense lenticellato sub anthesi 4--5 mm. longo; sepalis aequalibus carnosius verrucosis ovato-deltoides, 2 mm. longis, 2--2.5 mm. latis, apice obtusis, margine membranaceis; petalis tenuiter carnosius reticulato-venosis ovatis leviter falcatis, maximis 20 mm. longis et 13 mm. latis, apice rotundatis, basi angustis; androphoro explanato ca. 35 mm. longo, ligula 11--12 mm. lata, galea carnosia 12--18 mm. diametro dense echinata, appendiculis anantheris imbricatis linearibus acutis 3--5 mm. longis oblecta, staminibus 150--200, filamentis carnosius ca. 1.5 mm. longis distaliter incrassatis apice gracilibus, antheris oblongo-ovoides 0.5--0.6 mm. diametro basifixis; ovario semisupero (vertice rugoso conico sub anthesi supra disco 2 mm. exstato), biloculari, septo fragili, ovulis 3 vel 4 obovoides sessilibus erectis.

Type, Lawrance 239, collected June 17 in a forest, altitude about 2100 m., on Mt. Chapón. The collector notes that the flowers are purple with yellow stamens. It is a species related to the Venezuelan *E. Fendleriana* Miers, from which it differs by having the leaves somewhat larger, the venation more prominent on the upper surface, and the flowers subsessile rather than long-pedicellate. The latter character is very consistent, and in addition the flower-parts, especially the sepals, of the new species are smaller than those of *E. Fendleriana*.

The New York Botanical Garden

NEW SPECIES OF COLOMBIAN MIMOSACEAE AND CAESALPINIACEAE

Nathaniel L. Britton and Ellsworth P. Killip

INGA LAWRENCEANA sp. nov. Arbor 7--9 m. alta; sarmentis glabris verrucosis; petiolo et folii rhachide glabris 4--5 cm. longis; foliolis 2-jugis; rhachide inter bases cujusque jugi glandula sessilem orbicularem vel oblongam concavam 1--1.5 m. latam gerente; foliolis chartaceis oblongis ad oblongo-lanceolatis 9--15 cm. longis 3--5 cm. latis, ad apicem acutis vel acuminatis, ad basin angustatis, supra pallidis et glabris, subtus lucido-viridibus furfuresco-papillosis, juventute puberulentibus senectute glabris; venis pinnatis adscendentibus, subtus prominentibus, costa utrinque prominente; pedunculis gracilibus puberulentibus 2--4 cm. longis; floribus 10--15 umbellatis; bracteolis lineari-oblongis obtusis dense puberulentibus ca. 2 mm. longis; pedicellis paene filiformibus puberulentibus 6--12 mm. longis; calyce anguste campanulato puberulento ca. 4 mm. longo, dentibus triangularibus acutis ca. 1 mm. longis; lobis corollae ca. 7 mm. longae oblongo-ovatis acutis; staminibus ca. 3 mm. longis ad $1/3$ longitudinis conjunctis.

Type, Lawrence 260, collected June 28 in a forest, altitude about 1000 m., in the Chapón region, Boyacá, Colombia, and deposited in the herbarium of the New York Botanical Garden.

MIMOSA LAWRENCEANA sp. nov. Liana gracilis usque ad 4.5 m. longa, ramis quadrangularibus glabratis; petiolus cum rhachidi gracilis puberulus 6--8 cm. longus, aculeis brevibus recurvatis armatus, basin versus glandulam sessilem orbicularem paulo elevatam gerens; pinnae 2-jugae, rhachilla 2--4.5 cm. longa, apicem versus glandula consimili notata; foliola 3--5 membranacea late ovata obliqua valde reticulata, supra nitidula, subtus opaca pallida et puberula, jugo supremo 5--9 cm. longo, aliis multo brevioribus; inflorescentia paniculata puberula et breviter aculeata, folia subaequans vel longior, pedunculis filiformibus 0.5--3 cm. longis; flores breviter spicati pallide flavescentes, spicis multifloris 9--15 mm. longis; calyx minutus truncatus; corolla ca. 1.2 mm. longa 4-lobata; stamina 7 vel 8, ca. 3 mm. longa.

Type, Lawrence 600, collected November 26, 1932, at an altitude of about 1250 m., in the El Umbo region of western Boyacá, Colombia, and deposited in the herbarium of the New York Botanical Garden. A common name for the species recorded by the collector is "iguana."

SENEGALIA PODADENIA sp. nov. Liana alte scandens, cauli ca. 7 cm. diametro, annotinis rhachidibus foliorum et inflorescentia dense breviterque pilosis, annotinis aculeis brevibus recurvatis armatis; petiolus cum rhachidi gracilis aculeatus 8--14 cm. longus, inferne et hinc inde inter juga glandulosus; stipitibus glandularum 1--1.5 mm. longis, glandulis ca. 0.5 mm. latis; aculeis numerosis ca. 1 mm. longis; pinnae 20--30-jugae 2--3.5 cm. longae approximatae, rhachilla subfiliformi; foliola 20--40-juga linearia approximata glabra acuta 2--3 mm. longa ca. 0.5 mm. lata, costa inconspicua paulo excentrica; inflorescentia magna terminalis paniculata, pedunculis ca. 15 mm. longis vel brevioribus; capitula parva globosa multiflora; calyx canescens ca. 1.5 mm. longus, dentibus obtusis; corolla ca. 2 mm. longa, lobis acutis; stamina numerosa ca. 4 mm. longa pallide flava.

Type, Lawrance 346, collected July 21, 1932, in a high thick forest, altitude about 1100 m., in the Mt. Chapón region of western Boyacá, Colombia, and deposited in the herbarium of the New York Botanical Garden.

PLANTAE LAWRENCEANAE COLOMBIANAE

H. A. Gleason

The following notes and descriptions are based on herbarium material collected by A. E. Lawrence in Department Boyacá, Colombia, and now deposited in the herbarium of the New York Botanical Garden.

HORTIA COLOMBIANA sp. nov. Arbor excelsa; ramis supremis crassis glabris atropurpureis longitudinaliter rugosis; foliis chartaceis oblango-oblancoatis subacutis basi in petiolum brevem cuneatis utrinque glabris et reticulato-venulosis; inflorescentia corymbiformi verisimiliter glabra ramis crassis rugulosis confertis; pedicellis brevissimis crassis; calycis campanulati in sicco rugosi lobis depresso-semicircularibus late rotundatis; petalis carnosissimis ovato-oblongis apice inflexis infra medium pulvinato-incrassatis et dense brunneo-barbatis; filamentis crassis; ovario ovoideo in stylum conicum brevem 5-sulcatum abrupte contracto.

A tree 22-30 m. high and 6-20 dm. in diameter; upper branches fleshy, dark purple, longitudinally wrinkled, glabrous; petioles semiterete, narrowly margined, about 15 mm. long; leaf-blades chartaceous, narrowly oblong-oblancoate, as much as 26 cm. long and 5.5 cm. wide, subacute, very narrowly revolute, at least when dry, long-cuneate at base, glabrous, all veins and veinlets prominulous and reticulate on both sides; inflorescence corymbiform, densely branched, many-flowered, its axes probably glabrous (actually covered with a fungus mycelium), very stout, longitudinally wrinkled and bractless; pedicels stout, rugose, about 2 mm. long; calyx campanulate, fleshy, wrinkled when dry, its lobes broadly rounded and depressed-semicircular; petals fleshy, rose-color, ovate-oblong, 5.5 mm. long, 2.4 mm. wide, tipped with a linear inflexed tip 1 mm. long, pulvinate below the middle and densely bearded on the pulvinus with brown hairs; stamens 5, inserted in the lobes of the disk; filaments very stout, 3 mm. long; anthers oblong, 2 mm. long; disk low, obscurely 5-lobed; ovary ovoid, 5-celled, abruptly narrowed into the short conic style; ovules 2 in each locule.

Type, Lawrence 392, collected in thick forest in the Upper Chapón region, alt. 1500-1800 m. The genus *Hortia* includes eight other described species, essentially Amazonian in their distribution. One of them has globose heads; most of them have far larger leaves than our species, and in several the veins and veinlets are evanescent. *H. colombiana* apparently resembles *H. brasiliensis* Vand. in most features,

but differs in its larger flowers, its petiolate leaves, and the absence of bracts. The extension of the generic range to the northern Andes is most unexpected.

SYMPHYLLANTHUS PLICATUS sp. nov. Liana; rami lenticellis atris sparse notati; folia subrigida subsessilia ovato-oblonga breviter cuspidata ad basin inaequilateralem rotundata vel subcordata, supra praeter costam puberulam glabra, subtus brevissime pilosa praecipue ad venas; venae laterales utrinsecus circa 7 curvato-ascendentes et arcuatim aconnectae, supra impressae subtus valde prominentes; inflorescentia parva cinereo-tomentosa; sepala oblongo-ovata extra canescentia; petala sordide albida ad medium biloba, lobis replicatis; ovarium dense longeque villosum.

A vine 3-4 m. high, the younger branches densely ferruginous-tomentulose, soon glabrescent and marked with large black lenticels; petioles stout, puberulous, 2-4 mm. long; leaf-blades subcoriaceous, obovate-oblong, 9-15 cm. long, 4.5-8 cm. wide, abruptly short-cuspidate, entire, inequilateral at base, the one side rounded, the other somewhat subcordate, above glabrous on the surface and puberulent on the midvein, beneath inconspicuously pilosulous, especially on the veins; principal veins impressed above, very prominent beneath and with the veinlets conspicuously reticulate, the lateral veins about 7 on each side, curved-ascending and arcuately connected; inflorescence 4 cm. long, cinereous-tomentose, the pedicels very short; sepals distinct, oblong-ovate, 2.5 mm. long, 1.5 mm. wide, rounded above, canescent on the back, dark purple within; petals distinct, erect, obovate, 2 mm. long, 2-lobed to the middle, the lobes replicate and approximate, each 1.2 mm. wide; filaments distinct, 2.5 mm. long; anthers broadly reniform, notched at the end, 0.9 mm. wide, 0.7 mm. long; scales of the disk oblong, 0.3 mm. long, obscurely emarginate; ovary concealed in a mass of villous tomentum 1 mm. thick; styles 2, filiform, 2 mm. long.

Type, Lawrence 414, from the Alto Chapón region, alt. about 2100 m. It is apparently most closely related to *S. Donnell-Smithii* (Engl.) Gl., in which the leaves are more prominently acute and softly hirsute beneath and the petals spatulate, involute, and cucullate at the apex. So far as known to me this is the first species of the genus recorded from the Colombian Andes.

MATISIA LONGIFLORA sp. nov. Arbor ramis supremis cinereis; folia anguste oblonga vel elliptica acuminata integra basi inaequaliter rotundata solemniter penninervia utrinque glabra reticulato-venosa; flores oppositifolii pedicello tenuissime brunneo-tomentello superne sensim ampliato; calyx elongatus in sicco rugosus ad basin sensim angustatus tenuissime tomentellus; petala lineari-spathulata obtusa extra tomentella intra tubum calycis rigida supra calycem reflexa

et calyce subdimidio longiora; staminum tubus longe exsertus tomentellus cruribus patulis stigma paulo excedentibus.

A tree 12-18 m. high; upper branches cinereous, glabrate; petioles slender, glabrate 25-35 mm. long; leaf-blades firm, narrowly oblong or elliptic, 16-27 cm. long, 6-10 cm. wide, acuminate, entire, inequilaterally rounded at base, glabrous on both sides, pinnately veined, the lateral veins 9 or 10 on each side, arcuately connected near the margin, the veinlets prominently reticulate; flowers solitary opposite the leaves, very thinly cinereous-tomentulose; pedicels 5-7 cm. long, stout, nearly straight, slightly enlarged upward; calyx narrowly tubular-campanulate, leathery, 38 mm. long, gradually tapering to the base, rugose when dry, the erect lobes broadly depressed-ovate, obtuse, 4-5 mm. long; petals narrowly spatulate, the part within the calyx stiff, the exposed portion 2 cm. long, reflexed at anthesis, rounded at the summit; staminal tube 6 cm. long, more or less curved to one side, thinly tomentulose, its branches 17 mm. long, ascending; loculi 6 on each arm, linear-oblong, about 6 mm. long; style exserted 16 mm. beyond the staminal tube, the stigma capitate, not lobed.

Type, Lawrance 538, collected at the margin of a forest, El Umbo region, alt. about 750 m. Twelve species of this poorly known genus have been described. Of these, *M. cordata* and *M. bicolor* Ducke have cordate leaves; *M. obliquifolia* Standley bears its flowers on the trunk; in *M. Dowdingii* Sprague the leaves are pubescent beneath; in *M. Castano* Tr. & Karst., *M. alchornaefolia* Tr. & Pl., *M. lasiocalyx* Schum., *M. glandifera* Tr. & Pl. the leaves are 3-nerved; in *M. oblongifolia* P. & E. the calyx is split down one side; in *M. paraensis* Huber and *M. ochrocalyx* Schum. the flowers are very much smaller. Our species most closely resembles the remaining one, *M. Cornu-copiae* Tr. & Pl., in which the leaves are 3-nerved, acute at base and much smaller than in ours, the pedicels longer, and the calyx strongly curved.

GODOYA (§ *Rutidanthera*) *MAGNIFICA* sp. nov. Arbor; folia imparipinnata 4(rarissime 5)-juga; foliola anguste oblonga inaequilatera grosse incurvo-dentata; inflorescentia paniculato-racemosa, rachidis basi cicatricibus bractearum delapsarum confertis notata; sepala inaequalia exteriora ante anthesis, interiora ad anthesin decidua; petala magna alba subpersistencia; stamina circa 50 mox decidua.

A tree 15-18 m. high, the twigs not seen; leaves pinnately compound, about 4 dm. long; petioles glabrous, about 5 cm. long; leaflets usually 9, or rarely 11, or the terminal leaflet deeply 2-parted, varying in shape from narrowly ovate to linear-oblong or narrowly oblanceolate, the lowest as small as 6.5 by 2 cm., the upper as large as 20 by 5 cm., acute or acuminate, coarsely dentate with incurved teeth,

all except the terminal inequilateral at base, glabrous on both sides, conspicuously pinnately veined, the veins lightly impressed above, prominent and reticulate beneath; inflorescence probably terminal, composed of numerous racemes on an elongate axis, glabrous; peduncle crowded with the annular or nearly annular scars of fallen bracts; racemes 10-15 cm. long, with mostly 10-15 flowers on pedicels 10-15 mm. long; buds ovoid-conic, 15 mm. long; outer 2 sepals about equal, broadly orbicular, 8 mm. long, imbricate; inner 5 sepals orbicular, each one completely encircling the bud with its lateral margins overlapping; petals white, obovate-oblong, 20 mm. long, 12 mm. wide, rounded and somewhat inequilateral at the summit; stamens about 50 (49 and 55 in two unopened buds); filaments 3-4.5 mm. long; anthers linear, straight, 7-11 mm. long; ovary fusiform, about 1 cm. long at anthesis.

Type, Lawrance 599, collected in the El Umbo region, alt. about 1200-1500 m., "on precipitous barranca fronts in well-aired positions." Although the thirteen specimens examined probably came from one tree, the leaves show a remarkable variation. The basal leaflets are always shorter and proportionately broader. The upper leaflets are elongate, and either lanceolate, narrowly oblong, or oblanceolate; the base varies from rounded or even subcordate to obtuse or cuneate on the distal side of each leaflet, while the proximal side ranges from obtuse to narrowly cuneate. The terminal leaflet is regularly oblanceolate, but on one leaf it is cleft nearly to the base into two divergent oblanceolate segments. The axis of the inflorescence appears to be about 20 cm. long and its divergent branches give it a width of 20-30 cm. The basal sterile portion (5-8 cm. long) is closely covered with the scars of the fallen bracts, which sometimes completely encircle the stem. The sepals fall very early. The two outer may fall even before the buds have opened and at anthesis the flowers are quite asepalous. The stamens are declined to one side of the ovary and also fall early, so that the number visible in an open flower is much less than those counted in the buds. According to the collector, its local name is asuseno and its wood is used for making the gears of the small native sugar-mills.

The section Rutidanthera was separated by Planchon in 1846 to include the then recently discovered *G. splendida*. Van Tieghem discussed the group in 1904, raised it generic rank under the emended spelling Rhytidanthera, and described two other species. Gilg, in 1925, mentioned but one species which he retained in the genus *Godoya*. Our species differs from the three hitherto described in the much greater number of stamens; from *G. splendida* in its straight anthers; from *G. sulcata* in its deciduous bracts, and apparently stands nearest to *G. fragrans*.

ANTHODISCUS MONTANUS sp. nov. Arbor excelsa glabra, ramis floriferis teretibus gracilibus; folia digitatim trifoliata; petioli breves; laminae firmulae sessiles spathulato-ovatae, apice rotundatae, crenatae, ad basin longe cuneatae, inter se omnes aequales; racemi terminales foliis terminalibus paullum breviores, floribus apicem versus pedunculi confertis, pedicellis quam alabastris paullum longioribus; calyx cupuliformis patens obscurissime 5-angulatus; petala coriacea flava inter se cohaerentia ad anthesin decidua; stamina numerosissima inaequalia in alabastro in phalanges cohaerentia ad anthesin distincta radiatim patentia; ovarium subglobosum; styli 12 lineares adscendentes.

A tree "60-70 ft. high;" flowering branches slender, glabrous throughout; leaves digitately 3-foliolate; petioles slender, 10-15 mm. long, slightly dilated at the summit; leaflets equal in each leaf, sessile or nearly so, firm, spatulate-ovate, 4-7 cm. long, 2-3 cm. wide, rounded at summit, shallowly crenate above the middle, cuneate from above the middle to the base and at the base with slightly involute margins; racemes 4-6.5 cm. long, sterile below, the flowers crowded and corymbiform; pedicels ascending, 6-8 mm. long; calyx spreading, 4.5 mm. in diameter, very obscurely 5-angled; petals 5, closely coherent, falling at anthesis without separating, thick and leathery, yellow, 5.5 mm. long; stamens very numerous, filaments loosely cohering in phalanges before anthesis and the anthers inflexed, straight, separate, and radiately spreading at anthesis, 3-6 mm. long; anthers broadly oblong, 0.5-0.6 mm. long; ovary globose, nearly 2 mm. in diameter; styles 12, linear, ascending and divergent, 2.5-3 mm. long, tapering to the minute terminal stigma, deciduous shortly after anthesis.

Type, Lawrance 474, collected in thick forest in the El Umbo region, alt. about 1050 m. The collector notes that a "yellow cap consisting of five petals completely covers the stamens and falls to the ground when the flower is fully matured." Only three species of this poorly known genus have been described. Of these *A. trifolius* Mey. and *A. obovatus* Benth. have much larger leaves, petioled leaflets, and elongate racemes; in the former the leaves are acuminate and in the latter they are entire. Our plant is much more closely related to *A. peruanus* Baill., in which the raceme is elongate, the stamens united into phalanges, and the terminal leaflet much larger than the lateral ones.

DENDROSTIGMA gen. nov. Flacourtiacearum. Sepala 2 vel 3, valde imbricata. Petala 10 spiraliter imbricata. Stamina numerosa (circa 30?). Ovarium superum muricatum 1-loculare. Styli 5 trichotome ramosi in stigmata innumerabilia soluti. Capsula immatura globosa densissime muricato-spinosa. Arbor foliis alternis stipulatis, floribus 1-3 axillaribus speci-

osis albidis.

DENDROSTIGMA HYSTRICINA sp. nov. Petioli pilosuli; laminae magnae oblongae breviter acuminatae repando-dentatae basi obtusae vel rotundatae supra glabrae subtus ad costam venasque majores parce pilosulae venis subtus discoloribus pulchre reticulatis; sepala late rotundata extra pilosula; petala triangulari-obovata; filamenta crasse teretia antheras anguste ellipsoideas subaequantia; ovarium globosum muricatum et villosum; styli 5 ovarium subaequantia ramosissimi, stigmatibus conicis.

Small tree, the younger branches drying striate and somewhat sulcate, brown, sparsely puberulous; petioles pilosulous, 15-30 mm. long; leaf-blades thin but firm, oblong or elliptic-oblong, 12-24 cm. long, 5-9 cm. wide, short-acuminate, repand-serrate with low blunt teeth 5-10 mm. apart, somewhat narrowed from near the middle to a rounded or obtuse base, glabrous above or minutely pilosulous on the costa, beneath glabrous on the surface and pilosulous on the costa and principal veins; lateral veins about 10 on each side, curved-ascending; venation conspicuous beneath, brownish and beautifully reticulate; pedicels axillary, about 1 cm. long; sepals thick and leathery, rotund or depressed, strongly concave around the flower, 10-12 mm. long, as much as 16 mm. wide, rounded above, sparsely pilosulous without; petals triangular-obovate, nearly white, 13-16 mm. long, 12-13 mm. wide, broadly rounded above, somewhat crisped or slightly erose on the margin, cuneate or subunguiculate at base; filaments contiguous but distinct, 1.8-2.5 mm. long, subulate, thinly villous; anthers narrowly ellipsoid, 2 mm. long, setose in a narrow strip on each side, elsewhere glabrous; ovary 4 mm. long, densely covered with villous fleshy projections 0.5-1 mm. long, 1-celled with numerous ovules on parietal placentae; styles 4-4.5 mm. long, villous on the lower third, above this point repeatedly trichotomously branched and terminating in about 300 minute conical stigmas; fruit globose, 3 cm. in diameter, densely spiny.

Type, Lawrence 406, collected in the Alto Chapón region, alt. about 2100 m. The collector notes it as a tree 20 feet high and 6-8 inches in diameter, with sweet-scented greenish white flowers and brownish stamens. He was impressed by the remarkable stigmas and refers to them in his notes: "Flower is surmounted by a green parsley-like tuft growing out of a round green-colored ball." *Dendrostigma* is related to *Mayna*, five species of which were described from Colombia by Karsten and Triana under the generic name *Dendrostylis*. They state that the ovary is 3-carpellate with three bipartite styles which are multipartite at the stigmas; the flowers are completely unisexual. The same characters are assigned to *Mayna* by Melchior in the second edition of the *Pflanzen-*

familien and it is unbelievable that any of these authors would have neglected the remarkable features of our genus if they had been observed. In superficial appearance of the fruit and leaf, except the venation, our plant is much like an *Apeiba*.

HENRIETTELLA LAWANCEI sp. nov. § *Euhenriettella*; frutex 2-3 m. altus; ramuli teretes gracili, primum hirsuti, pilis subulatis basi incrassatis recurvatis, supra basin patentibus, mox glabri; petioli graciles 8-15 mm. longi sicut ramuli villosi; laminae tenues opacae lanceolato-ellipticae vel oblanceolatae, 5-8 cm. longae 16-25 mm. latae, breviter acuminatae, integrae, ad basin cuneatae, 5-nerviae, nervis exterioribus inconspicuis, supra planis subtus leviter prominentibus, nervis secundariis subhorizontaliter patentibus supra obscuris, supra ad costam et nervorum lateralium basin breviter pubescentes, ad paginam scabrae tuberculis depresso-conicis albidis in pilum brevissimum abeuntibus, subtus hirsutae praecipue ad venas venulasque, pilis circiter 1 mm. longis erectis; flores 5-meri in fasciculis paucifloris ad nodos ramorum vetustiorum infra folia oriundi; bracteae lanceolatae subulatae 0.8-1 mm. longae; pedicelli 3-6, 1.2 mm. longi; hypanthium campanulatum 10-costatum 1.6 mm. longum parce strigosum, pilis crassis 0.4 mm. longis; calycis tubus paullo patens 0.1 mm. latus; sepala late triangularia, a sinibus rotundatis lateribus concavis, 0.2 mm. longa; petala ad anthesin reflexa late ovata obtusa integra, 1.8-2 mm. longa, 1.6 mm. lata; stamina isomorpha; filamenta gracilia 2.2 mm. longa, 0.7 mm. infra apicem geniculata; antherae oblongo-lineares 1.7 mm. longae poro apicali dehiscentes, connectivo dorso elevato; ovarium breve inferum 5-loculare, summo plano vel paullo depresso; stylus crassus teres 5.5 mm. longus, stigmatibus capitato 0.8 mm. diametro.

Type, Lawrance 265, from thick forest in the Chapón region. The flowers are described as white and very fragrant; the stamens are also white. In general aspect the plant is reminiscent of *H. Goudotiana* Naud., but in its structure it shows a much closer relationship to *H. verrucosa* Triana. The latter is a much stouter plant, with thicker and broader leaves lacking the white tubercles of our species and much longer pedicels.

MICONIA PLENA sp. nov. § *Cremanium* (?); arbuscula 5-6 m. alta; ramuli acute quadrangulares et ad nodos incrassatos sat compressi, dense ferrugineo-tomentelli, vetustioribus glabrescentibus; petioli graciles, 15-35 mm. longi sicut ramuli tomentelli; laminae elliptico-oblongae, firmulae, 10-17 cm. longae, 3-6 cm. latae, acuminatae, minutissime repandae vel integrae, basi acutae, 5-nerviae, nervis 2 marginalibus tenuioribus et infra apicem evanescentibus, venis secundariis rectis 3 mm. dissitis sub angulo 80° orientibus

supra obscuris subtus prominulis, supra subnitentes subtus arcte stellato-tomentellae more *M. chrysophyllae*; inflorescentia late paniculata ramosa multiflora, 1-2 cm. stipitata, axibus arcte tomentellis; flores 5-meri, sessiles, ad ramos paniculae singuli, oppositi, vel fasciculati et terminales glomerati; hypanthium late campanulatum ecostatum, usque torum 1.7 mm. longum, arcte rufescenti-tomentellum, calycis tubus 0.4 mm. longus, margine subtruncato, sepalis vix evolutis, dentibus exterioribus late triangularibus sepala vix excedentibus, sicut calyce rufescentibus; petala obovato-oblonga, 2.2 mm. longa inaequilatera oblique truncata; stamina 20 isomorpha, inter se in magnitudine variabilia; filamenta 1.6 vel 1.8 mm. longa gracilia, 0.3 mm. infra apicem geniculata; antherae oblongae, 0.9 vel 1.1 mm. longae, ad basin subcuneatae, supra medium latiores, poro lato ventro-terminali dehiscentes, connectivo simplici; ovarium inferum 4-loculare, ovulis in quoque loculo 4-6, elongato-ellipsoideis, a placenta basali erectis; stylus teres glaber 4 mm. longus, stigmatibus punctiformi.

Type, Lawrence 152, from the Alto Chapón region. The assignment of the species to § *Cremanium* is questionable. The distally widened anthers are too broad for § *Eumiconia* or § *Glossocentrum*, while both anther and pore are narrower than the usual proportions in § *Cremanium*. The geniculate filament suggests § *Cremanium*. The anthers are probably 4-celled, as in *M. theaezans*, but this could not be verified. In general habit the species greatly resembles *M. chrysophylla* (Rich.) Urb. (= *M. fulva* DC.), but differs from it in numerous structural features.

MICONIA TUBULOSA sp. nov. § *Tamonea*; *M. Kraenzlinii* affinis differt foliis multo majoribus subtus arctissime cinerascensibus supra glabris caudato-acuminatis, panícula majore, floribus numerosioribus, ovario 5-loculare superne villosa, styli basi villosa.

A shrub 2.5-4 m. tall, younger branches lightly flattened and densely tomentose with deep brown stellate hairs, the same indument covering the petioles and inflorescence; leaves conspicuously unequal in each pair; petioles slender, strongly furrowed, 15 or 35-50 mm. long; blades thin, elliptic, 10-15 or 20-25 cm. long, 5-6 or 8-9 cm. wide, tapering to a caudate tip 2 cm. long, conspicuously denticulate, obtuse to subrotund at base, 5-nerved with an additional pair of marginal veins, glabrous above, very closely and minutely cinereously stellate-tomentulose on the surface beneath; primary and secondary veins lightly impressed above, the latter 4-7 mm. apart, diverging at an angle of about 80°; primaries and secondaries prominent beneath, roughly brown-stellate, tertiaries prominulous and longitudinally parallel, the quaternaries obscure; panicle compact and thyrsoïd,

12 cm. long, including the peduncle of 3 cm., its axis and branches roundly 4-angled and shallowly sulcate; flowers 5-merous, sessile in small terminal glomerules; hypanthium narrowly tubular, 4.5 mm. long to the torus, obscurely 10-ribbed, densely cinereous-tomentose; calyx-tube erect, prolonged 1.2 mm., the sepals depressed semicircular, 0.3-0.4 mm. long, pubescent externally like the hypanthium; exterior teeth none; petals obovate, 5 mm. long, 3 mm. wide, strongly inequilateral, acute on one side, silvery-stellate externally; stamens nearly isomorphic; filaments slightly flattened, glabrous, immature; anthers (immature) subulate, 3 mm. long, apparently 2-celled; connective flat on the back, dilated toward the base and prolonged into an ovate rounded lateral lobe on each side and a somewhat longer dorsal lobe, which is ovate in one series of stamens and truncate and wider in the other series; ovary nearly inferior, 5-celled, prolonged above into a short beak terminating in rounded villous lobes; style stout, straight, terete, 10 mm. long, sparsely villous near the base; stigma truncate, 1.1 mm. in diameter.

Type, Lawrance 484, collected in thick forest in the El Umbo region, alt. about 900 m. The collector notes that the flowers are sea-green in color. The silvery petals, the shape of the sepals, the beak of the ovary, the shape of the stigma, and the character of the connective indicate its close relationship to *M. Kraenzlinii* Cogn., from which it differs in the characters mentioned in the diagnosis.

MICONIA MEGALANTHA sp. nov. § *Adenodesma*; arbor excelsa, ramis supremis rachideque inflorescentiae acute 4-angulatis arctissime stellato-tomentellis; folia longe petiolata elliptico-oblonga; hypanthium late campanulatum superne valde incrassatum et ovarium 5-loculare inferum fere toto amplexans; calyx late patens lobis obsoletis; petala 5 pro genere longissima; stamina subisomorpha filamentis dense glandulosis, antheris subulatis 2-locularibus valde curvatis, connectivo crasso ad medium marginis glanduloso ad basin in lobos 2 laterales dense glandulosos dilatato; stylus longus glandulosus stigmatibus peltatis.

A tree "75-100 ft. high" (Lawrance), upper branches sharply 4-angled, somewhat dilated at the nodes, very closely and finely tomentulose with minute cinereous stellate hairs, the same type of indument extending over the inflorescence, hypanthia, petioles, and veins of the lower leaf-surface; petioles slender, 5 cm. long; blades thin, oblong-elliptic, about 10 by 25 cm., abruptly acuminate, entire, acute at base, 5-nerved, including a weaker pair of submarginal veins, thinly stellate-pubescent above when young, persistently so on the primaries, sparsely stellate on the surface beneath; principal veins lightly impressed above, prom-

inulous beneath, the secondaries 6-8 mm. apart, straight, diverging at almost right angles; inflorescence a freely branched, rather narrow panicle 15-25 cm. long, its branches sometimes in whorls of 3, the pedicels mostly about 5 mm. long; flowers 5-merous; hypanthium very thick-walled and firm, 2.5 mm. long to the torus, its walls greatly thickened inwardly above the ovary and closely surrounding the style; calyx widely spreading, 9 mm. in diameter, exactly truncate, sparsely pubescent internally, tomentellous like the hypanthium, the exterior teeth minute tubercles only; petals widely spreading at anthesis, elliptic, 25 mm. long, 10 mm. wide, densely and finely gray-tomentulose on the outer side, almost equilateral, several-nerved; stamens almost isomorphic; filaments slender, arcuate above, 11-12 mm. long, densely pubescent throughout with minute stipitate glands; anthers stoutly subulate, 7-8 mm. long, abruptly curved ventrally above the base, 2-celled, opening by a terminal pore; connective stout and thick, glandular along its margin near the middle, at base dilated into 2 lateral lobes which curve ventrally over the sides of the thecae and are strongly glandular; ovary wholly inferior, 5-celled, prolonged above into a stout beak 1 mm. high and dilated at its summit into a 5-lobed saucer-shaped organ 1.3 mm. wide; style somewhat curved, 14 mm. long, densely glandular-puberulent throughout; stigma peltate, 2 mm. in diameter.

Type, Lawrance 431, collected in forest in the Lower Chapón region, alt. about 900 m. According to the collector's field notes the flowers are "peach-blossom" in color and the wood is used for building houses. A second collection, no. 456, is in fruit; it comes from the El Umbo region at 900 m. and is described as a tree 15-18 m. high and 6-12 dm. in diameter, with bark "remining one of the bark of the fir tree." The fruiting hypanthium is 8 mm. in diameter, obscurely 10-ribbed, and surmounted by the persistent calyx.

The shape and glandulosity of the anthers is precisely that of the nine species recently included by me in § *Adenodesma* (Bull. Torrey Club 59: 365-370. 1932), and the species is accordingly added to that group notwithstanding the long-petioled 5-nerved leaves. In *M. axinaeoides* Gl. the leaves are only weakly 5-plei-nerved, the hypanthium is similarly thickened distally, and the lobes of the calyx are also obsolete, while the stamens are almost precisely like those of *M. megalantha*. Our new species may be differentiated from *M. axinaeoides* and from the other members of the section by amending the key presented on p. 366 (l.c.) as follows: Delete the paragraph leading to *M. axinaeoides*, beginning "Leaves weakly 5-plei-nerved," and substitute the following: Leaves 5-nerved or weakly 5-plei-nerved; walls of the hypanthium greatly thickened distally; calyx-lobes obsolete;

style and filaments densely glandular; style 14-21 mm. long.

Petiole 1.5 cm. long; leaf-blades broadly obtuse or subrotund at base; glabrous on the actual surface beneath; petals 16 mm. long; stigma small and truncate

4. *M. axinaeoides*.

Petiole 5 cm. long; leaf-blades acute at base, stellate on the lower surface; petals 25 mm. long; stigma peltate, 2 mm. in diameter

4a. *M. megalantha*.

It is interesting to note that the flowers of *M. megalantha* are the largest known in the genus *Miconia*.

HENRIETTELLA FISSANTHERA sp. nov. (an gen. nov.?) Frutex; caules juniores 4-angulati et sulcati, mox subteretes glabrescentes; petioli graciles tenuiter furfuracei; laminae tenues anguste obovatae, ad apicem obtusam abrupte acuminatae, ad basin late cuneatae, 5-plex-nerviae, minutissime albopunctatae, ad venas tenuissime furfuraceae; flores 5-meri graciliter pedicellati in fasciculis paucifloris infra folia orientibus; hypanthium late campanulatum parvum; sepala obsoleta; petal triangulari-lanceolata acuta intus supra medium lobos carnosos 3-4 gerentes; stamina isomorpha, filamentis complanatis, antheris oblongis crassis rimis 2 tota longitudine dehiscentibus, connectivo basi minute calcarato; ovarium 5-loculare inferum; stigma ovoideo-oblongum basi 5-lobatum.

Shrub 2-3 m. high, the young stems densely brown-furfuraceous, roundly 4-angled and sulcate, soon becoming subterete and nearly glabrous; petioles slender, 1-2 cm. long, thinly furfuraceous, soon glabrescent; blades thin, bright green, narrowly obovate, 8-11 cm. long, 3.5-5 cm. wide, abruptly acuminate to a slender obtuse tip, entire, broadly cuneate at base, 5-plex-nerved, barely scaberrulous above with minute whitish punctae, sparsely and minutely furfuraceous on the primaries beneath, otherwise glabrous; principal veins plane above, prominulous beneath, the secondaries 2-3 mm. apart, arising at an angle of about 80°, upper primaries diverging 10-15 mm. above the base, the outer pair weaker and submarginal; inflorescence of opposite fascicles of 2-6 flowers from the leafless lower nodes; pedicels filiform, 9 mm. long, thinly furfuraceous; flowers 5-merous; hypanthium very broadly campanulate, 2.5 mm. long, sparsely pubescent with dense but scattered tufts of minute hairs; calyx-tube prolonged about 0.2 mm., the sepals nearly obsolete, depressed-triangular, projecting only 0.1 mm.; petals barely imbricate, widely recurved-spreading at anthesis, lance-triangular, 4 mm. long, 2 mm. wide at base, acute, on the back dark-colored, sepal-like in texture and scabrously furfuraceous, on the inner side greatly thickened just above the middle into 4 fleshy oblong protuberances pointing in-

ward and downward; stamens 10, isomorphic; filaments flat, 2.2 mm. long, triangularly narrowed at the summit; anthers stoutly oblong, 1.9 mm. long, 2-celled, soon opening by 2 longitudinal slits extending from apex to base; connective prolonged at base into an ovoid blunt spur 0.2 mm. long; ovary wholly inferior, 5-celled, many-ovuled, its upper wall concave and extending almost to the torus, radially 10-ribbed; style terete, straight, 5 mm. long at maturity; stigma ovoid-oblong, 1.3 mm. long, 5-lobed at base around the style.

Type, Lawrance 606, collected in dense forest in the El Umbo region, alt. about 900 m. It differs from every other species of the genus known to me, either directly or through description, in two important characters, the longitudinal dehiscence of the anthers and the elongate 5-lobed stigma. Such differences are usually considered of sufficient weight in this family to warrant the erection of a genus. It has nevertheless been kept in *Henriettella* because of its entire agreement with the other characters of the genus. The peculiarly appendaged petals have not been observed by me in the genus before, but similar structures have been found in *Belucia*, which is apparently closely related.

CYPHOSTYLA STRIGOSA sp. nov. Caulibus, petiolis, venis subtus, inflorescentia, hypanthiis, et calycibus strigosis pilis incurvis; alabastris elongatis fusiformibus; petalis magnis.

Shrub about 2 m. high, the younger branches, petioles, inflorescence, hypanthium and calyx densely strigose with stoutly subulate, incurved hairs about 0.7 mm. long; petioles slender, 10-18 mm. long; leaf-blades firm, elliptic-oblong, 8-14 cm. long, 3.5-6 cm. wide, short-acuminate, entire, rounded to broadly obtuse below and subcordate, the auricles more or less overlapping, 5-7-pleinerved, finely strigose above with short brown curved hairs and densely strigose on the primaries with long straight hairs, pubescent beneath, especially on the veins and veinlets; veins plane above, prominulous beneath, the secondaries about 3 mm. apart, the tertiaries finely reticulate; inflorescence a small, few-flowered, terminal panicle, the 5-merous flowers all sessile, but often solitary and then apparently on pedicels 10-15 mm. long; buds fusiform, 20 mm. long, tapering to both ends; hypanthium 7 mm. long at anthesis, obconic, its walls greatly thickened distally to the terminal annular torus which bears 5 broadly elliptic petal-scars and 5 triangular stamen-scars; calyx calyptriform, deciduous at anthesis without splitting; petals broadly triangular-obovate, 36 mm. long, 26 mm. wide, equilateral, rounded above, cuneate to the base, freely nerved; stamens 5, isomorphic, alternate with the petals; filaments stout, 6 mm. long,

rounded on the inner side, flat on the outer, strongly recurved above; anthers oblong, straight or slightly curved, 4-4.5 mm. long, the tip strongly arched over the concealed pore; connective simple, gradually expanded basally and continuous with the filament; ovary inferior; style terete or obscurely ribbed, about 5 mm. long, near the summit greatly thickened and bent at right angles to the truncate stigma.

Type, Lawrance 419, collected in the Alto Chapón region, alt. about 2100 m. The genus *Cyphostyla* was proposed in 1929 to include two plants of remarkable floral structure from Antioquia. It is distinctly interesting to detect a third species among the recent collections of Lawrance. The two original species, *C. hirsuta* and *C. villosa*, were characterized by the long reflexed hairs of the hypanthium and calyx, while *C. strigosa* has stout, short, erect and more or less incurved hairs, and therefore necessitates a small emendation in the generic characters as originally stated.

ALLOMAIETA GRANDIFLORA Gl., originally described from Paima in northern Cundimarca, has been re-collected by Lawrance in the adjacent mountains of Boyacá.

SACCOLENA DIMORPHA Gl. Originally described in 1925 from a single specimen, this little known species has now been collected again by Lawrance, no. 144, in the mountains of Boyacá near its type locality at Paima in Cundimarca. Field notes indicate that it grows there in sphagnum moss at an altitude of about 2300 m. The collector adds that it has white flowers and is worth propagating because of the very dark green upper surface of the leaves. Certain amendments to the original descriptions are now possible. In the generic description: petals white, rather than yellow; anthers subulate and elongate, not oblong; appendage of the connective subulate in the long stamens, ovoid-triangular and saccate in the short stamens. In the specific description: height 8-25 cm.; leaves rounded to cuneate at base; peduncles stramineous, sharply contrasting with the stem in color; petals obovate, entire; anthers subulate, the smaller nearly straight, 2.2 mm. long, the connective prolonged 0.6-0.8 mm. to the summit of the filament and bearing a flattened ovoid-triangular ascending appendage; large anthers dorsally curved, 5.3 mm. long, the connective prolonged 1.9 mm. to the filament. Examination of the original dissection of the type shows that the anthers are all broken, a condition not recognized then and explaining the considerable discrepancy in the dimensions of the stamens.

JUANULLOA BICOLOR sp. nov. Liana alta ramis juvenilibus tomentosis mox glabrescentibus et irregulariter papyraceo-alatis; petioli tomentosi; laminae mediocres oblongae obtusae basi subrotundatae supra glabrae opacae subtus stellatopubescentes, venis circa 4 in utroque latere arcuato-con-

nectis venulis obsoletis; inflorescentia multiflora corymbiformis; calyx campanulatus 5-angulatus coloratus lobis oblongis acuminatis; corolla anguste tubulosa supra medium vix dilatata extra tomentosa, lobis brevibus erectis ovatis; stamina inclusa; stylus breviter exsertus.

A liana, climbing to 15 m., the flowering branches slender, thinly tomentose, soon becoming glabrous and irregularly winged with projecting plates of cork; petioles stout, 10-15 mm. long, densely stellate-tomentose; leaf-blades thin, chartaceous, oblong, 7.5-10 cm. long, 4.5-5.5 cm. wide, broadest slightly above the middle, obtuse, entire, subrotund at base, opaque and minutely rugulose above, beneath thinly stellate-pubescent on the surface and tomentose on the veins; lateral veins plane above, scarcely elevated beneath, about 4 on each side, curved-ascending and obscurely arcuately connected, veinlets obsolete; inflorescence terminal and from the upper axils, corymbiform, densely ferruginous-tomentose, the pedicels at anthesis about 6 mm. long; calyx campanulate, thick and coriaceous, 27 mm. long, thinly ferruginous-tomentose externally, 5-lobed about to the middle, the lobes oblong, triangularly acuminate; corolla narrowly tubular, 57 mm. long, 6 mm. in diameter at base and summit, 7-8 mm. in diameter above the middle, densely stellate-tomentose externally, glabrous within, its lobes broadly ovate, erect, 4 mm. long; stamens 5, inserted 5 mm. above the base of the corolla; filaments slender, 30 mm. long, densely white-villous at base; anthers linear, 13 mm. long, included in the corolla-tube; style filamentous, exserted about 5 mm., the stigma narrowly clavate.

Type, Lawrance 435, collected in thick forest in the El Umbo region of Boyacá, alt. about 900 m. *Juanulloa bicolor* is apparently a member of § *Sarcophysa*, differing from the previously known *J. speciosa* (Miers) Dun. in its less pubescent, thinner leaves, its proportionately longer and more slender corolla, and its much shorter and erect petals.

LEITGEBIA AND RORAIMANTHUS

H. A. Gleason

The genus *Leitgebia* was established by Eichler in 1871 to include a small shrub of heathlike aspect, *L. guianensis* Eichl., originally collected on the high savannas near Mount Roraima by Schomburgk. Eichler's description is accompanied by a plate. His description is accompanied by a plate and the two together leave little doubt as to the structure of the floral organs. Its characteristic features, at least in contrast to other plants to be mentioned below, are the presence of five staminodes which are inserted between the stamens and in a continuous circle with them, clawed at base, spatulate and flattened at summit, and the ovoid ovary, blunt at the top, 1-celled, with a few (6-8) ovules attached at the base, terminated by a very slender style.

Some years later Oliver added a second species, *Leitgebia imThurniana*, collected on the summit and upper levels of Roraima by im Thurn and recently re-collected there by Tate. Oliver called attention to the specific characters which separate the two very clearly, but apparently failed to see or to comprehend the generic significance of certain other structures. In Oliver's species the five staminodes are quite separate from the stamens, but are connate with each other, forming a short sheath outside the stamens; each of the five is elongate, surpassing the anthers, petaloid, spatulate, and more or less involute. The ovary is conic, tapering gradually into the stout style, 3-celled, with several ovules in each locule. There is no doubt that it represents a distinct genus, which is here proposed.

RORAIMANTHUS gen. nov. Folia conferta praesertim terminalia, stipulis alte fimbriatis. Flores axillares pedicellati. Sepala 5 imbricata. Petala 5 obovata rosea vel alba. Staminodia 5 inter petala et stamina inserta basi connata staminibus alterna, lobis erectis petaloideis spathulatis involutis. Filamentia breviter. Antherae lineariae erectae filamenta excedentes. Ovarium 3-loculare multiovulatum conicum in stylum elongatum angustatum.

A shrub of ericoid aspect, the small leaves crowded at the summit of the branches. Leaf-blades obovate-oblong, thickened at the margin, crenate near the apex, with ascending branched lateral veins. Stipules persistent, deeply fringed. Flowers 5-merous, axillary among the upper leaves, short-pedicelled. Staminodia 5, connate at base into a short membranous tube surrounding the base of the stamens, the lobes alternate with the stamens, erect, membranous, petal-

loid, spatulate, involute. Stamens 5 with short filaments and linear-subulate anthers. Ovary conic, 3-celled with numerous ovules, gradually tapering into the subulate style. Stigma punctiform.

RORAIMANTHUS IMTHURNIANUS comb. nov. (*Leitgebia im-Thurniana* Oliver) Endemic, so far as known, to the summit and upper levels of Mount Roraima

A NEW ELEPHANTOPUS FROM BRAZIL

H. A. Gleason

ELEPHANTOPUS ERECTUS sp. nov. Herbaceous circa 6 dm. altus, caulibus densiter pilosis foliaceis; folia 6 vel 7 utrinque densiter pubescentia leviter crenato-serrata, inferiora 15 cm. longa 4 cm. lata oblongo-oblongeolata subacuta ad basin cuneata in petiolum brevem, superiora minora usque ad 5 cm. longa 2 cm. lata sessilia basi rotundata; spicae 2 terminales erectae circa 3 dm. longae densiter pubescentes, infra medium steriles bracteis 1 vel 2 parvis ovatis; glomeruli sessiles et spicati 9-12; bracteae numerosae, exteriores ovato-lanceolatae usque ad 2 cm. longae, interiores gradatim angustiores et breviores, intimae lineari-subulatae capitula aequantes, omnes densiter sericeae; capitula 4-6 in quoque glomerulo; involucrium 11 mm. altum, squamis 4 exterioribus 5.5 mm. longis ovato-lanceolatis acutis ad apicem minute sericeis, interioribus 4 11 mm. longis linearibus apicem versus sericeis; achaenia 4 lineari-clavata 4.5 mm. longa densiter hirsuta; pappi setae 5 vel 6, 2-2.5 mm. longae laeves planae e basi ad apicem angustatae.

Type, number 16231, collector not stated (Glaziou?), from Estc. Fortaleza, Sao Paulo, Brazil, 29 Apr. 1899, in the herbarium of the New York Botanical Garden. It is obviously related to *E. hirtiflorus* DC., and differs in its denser pubescence, much larger and broader serrate leaves, more numerous spicate heads, and shorter pappus.

NINE SOUTH AMERICAN MELASTOMES

H. A. Gleason

Unless otherwise stated, the type specimens are in the herbarium of the New York Botanical Garden.

GRAFFENRIEDA COLOMBIANA sp. nov. Arbor 8 m. alta, ramulis supremis profunde bisulcatis glabris; folia paulo inaequalia; petioli 35-70 mm. longi graciles subteretes minutissime furfuracei; laminae late rotundato-ovatae membranaceae 15-20 cm. longae 13-17.5 cm. latae superne late obtusae ad basin late cuneatam rotundatae supra virides glabrae subtus fusc-escentes prope basin ad venas furfuraceae ceterum glabrae, 5-pli-nerviae, venis 2 marginalibus neglectis, nervi primarii usque ad apicem arcuatim producti, venae secundariae inter costam et venas primarias 2 et 3 sub angulo circa 60° orientes et infra medium folii distaliter recurvae, 6-8 mm. inter se distantes, inter venas 2 et 3 et venas exteriores subdirecti; venulae tertiariae obsoletae; panícula terminalis 15 cm. longa, pedunculo 6 cm. longo fere glabro sustentata, ramis paucis distantibus 2-5 cm. longis; flores 4-meri in capitulis plurifloris lateralibus terminalibusque subsessilibus dispositi; pedicelli 1-1.5 mm. longi; hypanthium campanulatum 2.3 mm. longum obscure nervatum tenuissime et sparsissime furfuraceum; calyx in alabastro acutus 1.4 mm. longus, ad anthesin fere ad torum in lobos 3 vel 4 irregulares ruptus; petala oblonga 4.7 mm. longa 1.6 mm. lata breviter acuminata; stamina isomorpha; filamenta subulata 2.2 mm. longa glabra; antherae arcuatae aurantiacae subulatae 3.6 mm. longae; connectivum infra thecas 0.2 mm. longum, in calcar erectum subulatum 0.8 mm. longum productum; ovarium liberum ellipsoideum 5-costatum glabrum 3-loculare; stylus gracilis 7 mm. longus, stigmatibus punctiformi.

Type, Klug 1866, in forest at Umbria, Comisaria del Putomayo, Colombia, alt. 325 m. Twenty-six species of Graffenrieda have been described, of which seventeen are included in Cogniaux' monograph. It is quite probable that detailed study of the genus as a whole will indicate that his classification of the species is artificial. Our species would be associated with numbers 11 to 15 of the monograph, with which it has apparently no real relation. It is rather to be compared with *G. emarginata* (R. & P.) Triana, which has much thicker leaves, cordate at base and conspicuously veiny, much stouter petals and rounded calyx-lobes, and which is much more pubescent in all its parts.

MICONIA PACHYDONTA sp. nov. § Jucunda: arbuscula; foliis obovato-oblongis mediocribus breviter petiolatis apiculatis

basi angustatis alternatim 5-pli-nerviis supra glabris subtus arctissime cinereo-tomentosis; panicula tomentosa, floribus 5-meris sessilibus in glomerulis bracteatis aggregatis; hypanthio tomentoso tubuloso; sepalis mox deciduis truncato-triangularibus, dentibus exterioribus magnis pyramidalibus patulis; petalis spathulatis; staminibus fere isomorphis, antheris subulatis basi bilobis; ovario 4-loculare, stylo elongato basi glanduloso-puberulo.

Small tree 5 m. high, the younger stems nearly terete, very finely fulvous-tomentose, soon glabrescent, the internodes 2-5 cm. long; petioles 5-10 mm. long, channeled above, thinly tomentulose or furfuraceous; leaf-blades thin, obovate-oblong, 12-20 cm. long, 5-8 cm. wide, abruptly apiculate, entire, narrowed or subcuneate at base, alternately 5-pli-nerved, with an additional pair of marginal veins, dull green and glabrous above, very finely cinereous-tomentulose beneath; uppermost primaries arising 3-4 cm. above the base, nearly plane above; secondaries 3-8 mm. apart, in the basal part of the leaf spreading horizontally, above at an angle of about 70°, obscure above, elevated beneath; tertiaries obsolete above, reticulate beneath; panicle erect, 1 dm. long, its axes strongly angled and compressed, thinly cinereous; flowers 5-merous, sessile, the lower solitary at the nodes or in 2-3-flowered glomerules, the upper crowded in 3-5-flowered glomerules; bracts closely appressed, suborbicular, about 7 mm. long, thinly stellate; hypanthium nearly tubular, thick-walled, 7 mm. long to the torus, densely and closely cinereous-tomentose; calyx-tube not prolonged; sepals connivent or connate in bud, at anthesis splitting to the torus and soon deciduous, truncate-triangular, 2.4 mm. long with a minute terminal apiculum 0.4 mm. long, thinly pubescent within, tomentose on the back like the hypanthium; exterior teeth subapical, stoutly pyramidal, spreading at nearly right angles, the acute upper (inner) edge 1.1 mm. long; petals oblong-spatulate, 6 mm. long, 3.2 mm. wide, subunguiculate, the basal portion and a triangular part of the blade thick and fleshy, nearly symmetrical, not retuse; stamens nearly isomorphic; filaments flattened, 7 or 5.7 mm. long, glabrous; anthers subulate, 8.5 or 7 mm. long, 2-celled, with strongly convolute thecae, the thecae and connective bilobed at base and prolonged 0.8 mm. below the summit of the filament; connective of the smaller anthers simple, of the larger anthers slightly elevated just above the filament and bearing a minute rounded protuberance; ovary about one-third inferior, 4-celled, with a short beak; style slightly curved, 17 mm. long, minutely glandular-puberulent in the lower fourth; stigma truncate or subcapitate.

Type, Klug 2143, in dense forest at Florida, at the mouth of Río Zubineta into Río Putomeyo, Peru, alt. about 180 m.;

vernacular name (Huitoto Indian) name Jucaguino-ey. A second collection at the same place (Klug 2223) bears the native name Chaita-nargu-ey.

Miconia pachydonta obviously belongs with a group of § *Jucunda* recently discussed by me (Bull. Torrey Club 59: 361-364. 1932.) and characterized by unusually large exterior calyx-teeth, as well as by other features. The primary division of the group in the key depends on the leaf-base; our species falls in the first group and is at once contrasted with *M. gratissima* Benth., which has similar pyramidal exterior teeth, but differs in its much narrower leaves with primaries arising nearly from the base, smaller and more virgate panicle, more thinly tomentose hypanthium, erect and somewhat incurved exterior teeth, and spinulose-tipped ovary. Notwithstanding its leaves, *M. pachydonta* is more closely related to *M. fissa* Gl. and *M. megaphylla* Gl. In both of these the leaves are nearly or quite sessile and rounded to amplexicaul at base. In *M. megaphylla* the leaves are also 9-13-ply-nerved and the flowers 6-merous; in *M. fissa* the smaller anthers are glandular and the exterior teeth are carinate on the outer side.

In most of these species, including *M. pachydonta*, the anthers are bent back so far at anthesis that they lie horizontally across the flower with the connective down; that is, they turn during the opening of the flower through an angle of 270 degrees.

MICONIA COOKII sp. nov. § *Amblyarrhena*: *arborescens*; *caulibus juvenilibus 4-angulatis et sulcatis*; *petiolis gracilibus elongatis*; *laminis ovato-lanceolatis membranaceis integris abrupte acuminatis basi cuneatis 3-ply-nerviis utrinque glabris*; *paniculis multifloris*; *floribus 5-meris*; *hypanthio subglobose*; *sepalis triangularibus acutis dentibus exterioribus nullis*; *petalis rotundato-obovatis*; *staminibus isomorphis connectivo basi truncato ad lateres minute producto*; *ovario 5-loculare stylo elongato stigmatibus truncato*.

A tree with glabrous stem and foliage; younger stems roundly 4-angled and shallowly sulcate; petioles slender, 2-3 cm. long; leaf-blades thin, bright green, narrowly ovate-lanceolate, or occasionally obovate-lanceolate, as much as 16 cm. long by 5.5 cm. wide, abruptly acuminate to a short cusp, entire, somewhat cuneate at base, 3-ply-nerved, the primaries lightly impressed above, elevated beneath, the secondaries 5-7 mm. apart, ascending at an angle of about 80°, obscure above, barely elevated beneath, the tertiaries obsolete above, plane and reticulate beneath; inflorescence a sessile, freely branched panicle 11 cm. long; flowers 5-merous, in terminal glomerules of 3, on pedicels 0.7 mm. long, the terminal and sometimes also the lateral short-pedicellate; hypanthium subglobose, 2.2 mm. long to the torus,

very sparsely and minutely arachnoid-puberulous and brown-punctate; calyx-tube erect, prolonged 0.2 mm. to acute sinuses; sepals triangular, acute, 0.9 mm. long, somewhat spreading and slightly pubescent at the tip, exterior teeth not differentiated; petals round-obovate, 2.2 mm. long, obscurely inequilateral and retuse; stamens isomorphic; filaments stout, glabrous, 2 mm. long; anthers stout, blunt, 2 mm. long, opening by a minute dorso-terminal pore, the connective forming a conspicuous dorsal ridge, truncate at base on the back but prolonged at the sides into lateral lobes 0.2 mm. long; ovary half-inferior, 5-celled, its summit depressed-conic, sharply 10-angled and minutely 10-toothed; style straight, glabrous, 5.6 mm. long; stigma capitate, barely expanded.

Type, Cook & Gilbert 1742, collected at San Miguel, Urubamba Valley, Peru, alt. about 1800 m., and deposited in the United States National Herbarium, no. 604912. The species is related to *M. elongata* Cogn. of Bolivia and *M. monzoniensis* Cogn. of Peru. The latter differs from ours in its crowded panicles, much shorter petioles, broader leaves abruptly narrowed to a slender cusp, and 4-celled ovary; the former has much smaller flowers in all dimensions, peltate stigma, and long-acuminate leaves.

MICONIA MESMEANA sp. nov. § *Amblyarrhena*: *M. difficilis* Triana habitu et structura arcte affinis differt pubescentia stellata furfuracea multo tenuiore, hypanthio subglabrato, calycis lobis erosis, dentibus exterioribus latissime triangulari-subulatis, antheris alternatim subinaequalibus connectivo basi 1- vel 2-calcarato, ovario 2-loculari, stigmate paulo dilatato.

A shrub 2-4 m. high, the younger branches minutely and sparsely stellate-furfuraceous and rather densely hirsute with spreading hairs 1 mm. long; petioles slender, 3-5 mm. long, hirsute above, glabrous beneath; leaf-blades firm, elliptic to oblanceolate, 5-7 cm. long, 1.5-2.5 cm. wide, abruptly acuminate to an obtuse tip, slightly revolute after drying, minutely ciliate with incurved subulate teeth, acute or broadly cuneate at base, 3-plexi-nerved; primary veins lightly impressed above, prominent beneath and hirsute near the base with horizontally spreading hairs; secondaries spreading at nearly right angles, obscure above; tertiaries obscure and reticulate; both surfaces glabrous, the upper minutely rugulose; inflorescence rather densely paniculate, 6-8 cm. long, its branches pubescent like the stem; flowers 5-merous, subsessile; hypanthium subglobose, 2.3 mm. long to the torus, yellowish, apparently glabrous but very minutely stellate-furfuraceous toward the base; calyx-tube prolonged 0.3 mm.; sepals broadly triangular, 0.4 mm. long, obtuse or subacute, often slightly erose; exterior teeth broadly tri-

angular-subulate, appressed, about half as long as the sepals; petals (immature) suborbicular, shallowly retuse; filaments (immature) flat, much broadened below the middle; anthers ellipsoid, 4-celled; connective slightly elevated toward the base into a dorsal ridge and prolonged in alternate stamens into one or two short basal spurs; ovary half-inferior, 2-celled; stigma truncate, slightly expanded.

Type, Killip & Smith 20012, collected between Pamplona and Toledo, Norte de Santander, Colombia. The general similarity of the plant to the type specimen of *M. difficilis* is striking, but a closer comparison discloses the various differences enumerated in the diagnosis, which are considered to justify the recognition of the plant as a distinct species.

GLIDEMIA OSTRINA sp. nov. § *Sagraea*: fruticosa; folia ampla ovata 7-9-nervia supra glabra subtus purpurea ad venas venulasque minutissime furfuracea; cymae minimae pauciflorae; flores 4-meri subsessiles; hypanthium suburceolatum parvum; sepalis minuta obtusa, dentibus exterioribus crassis patulis late triangularibus; petala ex basi lata oblonga; stamina isomorpha, filamentis sub apicem geniculatis, antheris anguste obovatis 4-locularibus, connectivo paulo elevato rubro-lineato vel glanduloso; ovarium toto inferum 2-loculare, stylo glabro, stigmate punctiformi.

Shrub 2.5 m. high, younger stems roundly 4-angled, prominently sulcate, thinly furfuraceous, later becoming terete and glabrous; leaves approximately equal in each pair; petioles slender, 3-6 cm. long, minutely furfuraceous; blades membranous, ovate, 10-18 cm. long, 7-12 cm. wide, abruptly short-acuminate, entire, rounded to the cordate or subcordate base, 7-9-nerved, green and glabrous above, beneath purple, glabrous on the surface, minutely furfuraceous on the veins and veinlets; veins plane and obscure above, prominulous and reticulate beneath, the secondaries diverging at an angle of about 80° , 3-5 mm. apart; cymes few-flowered, about 1 cm. long, minutely furfuraceous; flowers 4-merous, on pedicels 0.5-1 mm. long; hypanthium urceolate to subglobose, 1.4 mm. long to the torus, very minutely furfuraceous; calyx-tube prolonged 0.6 mm., its lobes erect, very broadly triangular, scarcely more than 0.1 mm. long; exterior teeth thick, spreading, broadly triangular, 0.5 mm. long; petals oblong, 1.5 mm. long, 1 mm. wide at base, obscurely inequilateral and shallowly retuse; stamens isomorphic; filaments flattened, 1.4 mm. long, geniculate just below the apex; anthers narrowly obovoid, 1.1 mm. long, 4-celled, opening by a minute terminal pore; connective barely elevated into a low dorsal ridge, not prolonged at base, red-lineate or possibly glandular; ovary inferior, 2-celled; style straight, 3.6 mm. long; stigma punctiform.

Type, Pittier 11818, collected in humid forest at El Portachuelo, Aragua, Venezuela. According to the treatment of the older species by Cogniaux, *C. ostrina* falls among the species numbered 73 to 76, all of which have much larger panicles and flowers and denser pubescence. Its real affinity is apparently with *C. ampla* Cogn., numbered 88 in Cogniaux' monograph, which also has much larger flowers and distinctly stellate pubescence.

HENRIETTELLA LORETENSIS sp. nov. Arbuscula; ramis junioribus minutissime furfuraceis mox glabris; petiolis fere glabris; laminis oblongo-ellipticis acuminatis integris basi cuneatis 3-pli-nerviis utrinque glabris praeter costam subtus sparissime stellato-puberulam; floribus 4-meris fasciculatis breviter pedicellatis; hypanthio late campanulato; calycis tubo truncato dentibus exterioribus minimis subulatis; petalis triangularibus acutis supra medium valde incrassatis; staminibus isomorphis, antheris crassis obtusis connectivo simpliciter; ovario infero 4-loculare; stylo elongato, stigmatibus truncato.

Small tree 5 m. high; twigs grayish-brown, very minutely furfuraceous and somewhat flattened when young, soon glabrescent and terete; petioles slender, channeled above, about 15 mm. long; leaf-blades thin, oblong-elliptic, 10-13 cm. long, 4-4.5 cm. wide, abruptly short-acuminate, entire, cuneate at base, 3-pli-nerved with an additional pair of marginal veins, glabrous above, very sparsely stellate-puberulent on the midvein beneath; secondaries 4-5 mm. apart, arising at an angle of about 80°; flowers 4-merous, numerous in sessile fascicles below the leaves, on pedicels 4 mm. long; hypanthium broadly campanulate, 1.6 mm. long to the torus, glabrous; calyx-tube prolonged 0.3-0.4 mm., truncate; exterior teeth subulate, projecting less than 0.1 mm.; petals triangular, 3 mm. long, nearly 2 mm. wide, glabrous, thin at the base, above the middle strongly thickened on the inner side; stamens isomorphic; filaments flat, 1-nerved, 2.5 mm. long; anthers stoutly oblong, obtuse, 2 mm. long, the connective neither appendaged nor prolonged; ovary inferior, 4-celled; style glabrous, slender, 7 mm. long; stigma truncate.

Type, Klug 2215, from the Río Putomayo, at the mouth of Río Zubineta, Dept. Loreto, Peru. The species is apparently related to *H. fascicularis* (Sw.) Triana, which has larger flowers and hirsute stems and foliage.

BLAKEA TRUNCATA sp. nov. Frutex scandens glaberrimus; rami juveniles crassi irregulariter angulati internodiis brevibus; folia chartacea obovato-oblonga ad apicem rotundatam in acuminem brevem linearem, abrupte contracta, integra, ad basin in petiolum crassum brevem subcuneata 3-pli-nervia; pedunculi elongati solitarii uniflori; bracteae externae foliaceae venosae basi connatae ovatae acuminatae, internae

late ovatae multo breviores obtusae paulo recurvatae; hypanthium campanulatum; calycis limbus erectus truncatus; petala magna alba anguste ovata acuminata; antherae semi-ovoideae in annulo cohaerentes basi longe calcaratae; ovarium toto adhaerens in rostrum conicum productum; stylus gracilis stigmate punctiformi.

§ *Pyxidanthus*: a climbing vine, glabrous throughout; upper branches stout, irregularly angled with short internodes; leaves apparently equal in each pair, the blades obovate-oblong, chartaceous, opaque, about 13 cm. long by half as wide, rounded above into a linear acumen 1 cm. long, entire, cuneate or subcuneate at base into a petiole 2-5 mm. long, 3-ply-nerved, 3-ply-nerved, the obscure secondaries about 1 mm. apart, the lower surface minutely punctate; peduncles solitary, 1-flowered, about 3 cm. long; outer bracts connate for 9 mm. at base, the free portion broadly ovate, 36 mm. long, 24 mm. wide, foliaceous, acuminate, about 5-nerved, the midvein elevated on the back; inner bracts free, closely appressed to the hypanthium, broadly ovate, 20 mm. long, 16 mm. wide, obtuse, recurved at the summit; hypanthium campanulate, 12.5 mm. long to the torus; calyx-limb erect, truncate, 2.5 mm. wide; petals 6, white, narrowly ovate, 30 mm. long, 12 mm. wide, long-acuminate; filaments 10 mm. long; anthers violet, cohering in a ring, stoutly semi-ovoid, opening by 2 terminal pores, the thick connective prolonged basally below the attachment of the filament into a triangular ascending spur 5 mm. long; ovary wholly inferior, its concave summit produced at the center into a slenderly conic beak 5 mm. high; style slender, 18 mm. long, slightly decurved; stigma punctiform.

Type, Klug 1862, collected in forest at Umbria, Comisaria del Putomayo, Colombia, alt. 325 m. Its connate outer bracts place it at once into the section *Pyxidanthus*, within which only a few species are known. None of these even approaches our species in the size of flowers or bracts.

MICONIA MUTISELLA sp. nov. § *Amblyarrhena*; frutex ramosus internodiis brevibus; folia coriacea parva ovata denticulata utrinque rotundata 3-nervia, supra glabra, subtus tomentella; paniculae parvae folia vix excedentes; flores 5-meri; hypanthium tomentellum; sepala triangularia acuta, dentibus exterioribus crasse conicis patulis.

Apparently a dwarf shrub of high altitudes, the stems stout, densely and somewhat fastigiately branched, terete, densely brown-tomentulose when young, glabrescent in age, the internodes above only 3-6 mm. long, or 15 mm. long on the oldest parts; petioles stout, 1-2 mm. long, tomentulose; leaf-blades thick, ovate, 7-9 mm. long, 4-6 mm. wide, rounded at both ends, denticulate with blunt teeth 0.5-0.8 mm. apart, 3-nerved with an additional pair of marginal veins,

glabrous above with obscure venation, sparsely stellate-pubescent beneath, especially on the prominently elevated primaries, the secondaries and tertiaries not differentiated; panicles terminal, crowded, few-flowered, brown-stellate-tomentose, scarcely exceeding the leaves; flowers 5-merous, subsessile; hypanthium campanulate, 2 mm. long to the torus, densely stellate-tomentose; calyx-tube prolonged 0.3 mm. to rounded sinuses, pubescent like the hypanthium, the sepals triangular, acute, 0.5 mm. long, exterior teeth stoutly and obliquely conic, spreading 0.3 mm. at right angles to the sepals; petals oblong-ovate, 2 mm. long; stamens isomorphic; filaments flat, 0.8 mm. broad, abruptly narrowed shortly below the anther; anthers stoutly oblong, 1.3-1.4 mm. long, opening by a minute terminal pore, the connective elevated into a low dorsal ridge, neither lobed nor prolonged at the base; ovary half-inferior; style stout, glabrous, 2.3 mm. long; stigma punctiform.

Type, Mutis 2457, collected presumably in Colombia and deposited in the United States National Herbarium, no. 1561606. The structure of the anthers confirms its position in § *Amblyarrhena*, within which it differs from all known species in its minute leaves.

MICONIA EUGENIOIDES Triana was originally described from the upper Rio Negro. In the same paper Triana also described *Oxymeris cuspidata* from two types, one from Rio de Janeiro and the other from San Gabriel on the Rio Negro. Careful examination of type material of both species, Spruce 2263 and 3531, reveals only one small point of difference between them, except differences in dimensions which may well be expected from material in quite different stages of development. In the type of *M. eugenioides* the appendage of the larger stamens is triangular, while in *Leandra* (*Oxymeris*) *cuspidata* it is truncate at tip. The two species are accordingly united. Nomenclatorially their union offers no difficulty, but some question may be raised on the propriety of uniting two plants which were placed in different genera by such distinguished students as Triana and Cogniaux. The genus *Leandra* differs from *Miconia* essentially only in its acute petals. Most species of the genus have a different habit, and may often be distinguished at a glance, but in several cases they approach each other rather closely. The anthers of *Leandra* are regularly unappendaged; in *Miconia* both simple and appendaged anthers exist. The anthers of our species are distinctly miconioid in structure and are practically duplicated in numerous other species of § *Eumiconia*. The habit of our species also resembles *Miconia* much more than *Leandra*. The name *M. eugenioides* Triana therefore stands for the species. The nearest relative of the plant is *M. tetrasperma* Gl., also with acute petals.

PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

July, 1934

No. 2

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number: 75 cents; per volume \$5.00 in advance.
Vol. I, number 1, was issued December 4, 1933.

NEW SPECIES OF PLANTS OF THE LADEW

EXPEDITION TO BOLIVIA. (a)

Henry Hurd Rusby

In 1926, through the generosity of Mr. Harvey S. Ladew, the American Museum of Natural History was able to send a small biological expedition to Bolivia. The territory to be explored was the Amazonian slopes of the Cordillera Real, the principal objectives being the assemblage of representative collections of the mammals, birds, and plants of the region. The botanical collections were made by Mr. G. H. H. Tate and included 1275 numbers, of which the following are new to science. The types of these new species are deposited in the herbarium of The New York Botanical Garden. Excellent collector's notes accompany all specimens, and it is to be regretted that want of space forbids the publication of the entire list, as well as Mr. Tate's interesting sketch of the journey.

Mr. Tate has compiled the following table showing the geographical distribution of the collections:

First trip to Yungas, Bolivia

La Cumbre	15,000 ft.	1-48
Alaska Mine	13,500 ft.	49-102
Pongo	12,000 ft.	103-273

(numerous mosses also, but unnumbered).

Mapiri-Tipuani trip, Bolivia

Altiplano between La Paz and Sorata	14,000 - 15,000 ft.	998-1003
Sorata	8,000 ft.	767-779
Cocopunco	10,000 ft.	274-385
Road from Cocopunco to Pararani (Pararani about 5,000 ft.)		386-392
Road from Pararani to Mapiri		393-399
Mapiri	2,000 ft.	400-498
Rio Chimata	1,900 ft.	499-552, 593-613
Guanay	1,800 ft.	553-592
Road from Guanay to Carahuarani		1213-1215
Chaquini		1115-1195
Ticunhuaya	4,800 ft.	1051-1114
Simacu	5,800 ft.	No numbers
La Joya	5,900 ft.	1004-1050
Okara	7,500 ft.	890-997

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Road from Okara to Ancoma		836-889
Tipuani trail, from top of divide, 17,000 ft., down to Sorata		780-835
Second trip to Yungas, Bolivia		
Pitiguaya		721-766
Nequejahuiria	8,000 ft.	614-689
Rio Aceramarca	11,500 ft.	690-720
Peru		
Arequipa	7,550 ft.	1196-1212

COMMELINA REFLEXA Rusby, sp. nov. Caules vix ramosi erecti crassi glabri vel glabrati; laminae quam vaginis 3-4-plo longiores acuminatae et acutae; spatha valde reflexa ad angulam 90° a pedunculo; ramulus floriferus spatham aequans densiflorus; capsula ovalis 5 mm. longa 3 mm. diametro.

Nearly glabrous, or the upper stem portion more or less puberulent; stems stout, erect, sparsely branched, the branches erect; leaves few; sheaths a fourth to a third as long as the blades, thick and rigid, about 10-ribbed; leaf-blade to 12 cm. by 2.5 cm., lanceolate, long-acuminate and acute, the upper ones erect, the lower spreading; peduncles elongated, stout, erect; spathe turned at a right angle to its peduncle, in fruit 3.5 by 2.5 cm. in the folded state, scarcely acuminate, acute or obtusish, about 15-nerved, the nerves slender, sharp, connected by numerous fine straight veins; lower branch of the cyme about 13 mm. long, naked, rigid, the floriferous branch about two-thirds of the length of the spathe, in its incurved position, but about equaling it when straightened, densely flowered, the flowers not seen; pods 5 mm. long, 3 mm. broad, oval.

First collected by O. E. White at Pongo de Quime, Bolivia, alt. 11,500 ft., in July, 1921 (Mulford No. 172). "Growing in full sunshine, about 12 inches high, the flowers blue." Collected by G. H. H. Tate on the road from Okara to Ancoma, alt. 11,000 ft., April 29, 1926 (No. 847).

COSTUS LONGIFOLIUS Rusby, sp. nov. Caules debiles internodiis 2-3 cm. longis 6-7 mm. crassis; vaginae apice breviter pilosae et ciliatae; petioli breves torti pubescentes; laminae lanceolatae utrinque acuminatae acutae tenues; spica late ovoidea squamis patulis late ovatis acutis crassis; calyx infundibuliformis dentibus late triangularibus mucronatis.

Stem rather slender, weak, its height unknown; internodes 2 or 3 cm. long, 6 or 7 mm. thick, the sheaths light brown, the summit slightly oblique, sparsely short-pilose and short-ciliate; petioles 1 cm. long, light brown, twisted, pubescent, nerved; blades to 25 by 4 cm., lanceolate to oblanceolate, acuminate at both ends, acute, very thin, bright

green, glabrous above, softly pubescent beneath, but becoming nearly glabrous with age; spike broadly ovoid, 8 cm. long by 9 cm. broad (in my specimen), the scales spreading, to 5 by 2.5 cm., ovate, with broad base and acute summit, very thick and coriaceous, finely puberulent; bractlets 2.5 cm. long, lanceolate, retuse at the summit, strongly complanate, about half enclosing the fruit, many-nerved; calyx 1.5 cm. long, 8 mm. broad at the mouth (as pressed), many-nerved, regularly infundibular, the teeth 3 mm. long, broadly triangular, tipped by a dark-colored mucro; summit of ovary and base of calyx sparsely short-pilose; fruit obovoid, 1.5 by 1 cm.; seeds 3.5 mm. long, 2 mm. broad, obovoid, truncate, black, tuberculate, mostly enclosed in the thin, white, hyaline aril, which is longer than the seed on one side.

Collected by G. H. H. Tate at Mapiiri, Bolivia, alt. 2,000 ft., March 30 to April 6, 1926 (No. 442).

COSTUS TATEI Rusby, sp. nov. Caulis debilis puberulus; ligula auriculata pilosa; lamina obovata mucronulata ciliata; spica ellipsoidea squamis adpressis subrotundis; calyx 4 mm. longus campanulatus dentibus brevissimis.

Pubescent or puberulent, the leaves ciliate; stem weak, its height unknown; internodes 4 or 5 cm. long, the sheaths 4 to 10 mm. broad, minutely puberulent, the summit slightly oblique, the ligule shortly auriculate above the base of the leaf, its margin more or less pilose; leaf thickish, sessile, to 17 by 7 cm., obovate, with acutish base and acutely mucronate summit, the margin strongly ciliate with hairs similar to those which clothe the upper surface of the midrib, the upper surface otherwise glabrous, the lower surface puberulent or pubescent, the transverse lines exceedingly numerous, almost as wide as the spaces between them; spike ellipsoid, 8 by 3.5 cm. (in my specimen), the scales puberulent and closely appressed, 2 cm. long and broad, subrotund, obtuse; bractlet 1 cm. long, oblong, acutish, complanate, not enclosing the flower; immature fruit 5 mm. long, 2 mm. broad at the truncate summit, tuberculate; calyx 4 mm. long, broadly campanulate-turbinate, subtruncate, the teeth extremely short; remainder of flower not seen.

Collected by G. H. H. Tate at Rio Chimata, Bolivia, alt. 1900 ft., April 1 to 14, 1926 (No. 523, the type). No. 441, from Mapiiri, alt. 12,000 ft., March 30 to April 9, is the same species. This specimen exhibits a cylindric spike 9 by 3 cm. Its leaves reach 25 by 10 cm. No. 647, of the Mulford collection, from the Bopi River, alt. 2200 ft., August 8, 1921, collected by O. E. White, is the same species, as is also No. 1808, from Rurrenabaque, November 25. These latter specimens are much more pubescent than the

Tate plant. The species is well distinguished by the ciliate margins and midribs of the leaves.

MYRIOCARPA TATEI Rusby, sp. nov. *Asperime denseque pubescens; caules crassi atque debiles; petioli albido-setosi; laminae tenues ovatae abrupte acuminatae acutae basi obtusae serratae; spicae numerosae elongatae saepissime simplices densiflorae floribus divaricatis albido-pilosis; ovarium late ovoideum stylum subaequans.*

Densely and shortly rough-hairy throughout; branchlets stout, but weak and crooked, reddish-brown and gray-hairy, the hairs matted together; stipules early deciduous, 1 cm. long, ovate, acuminate and acute; petioles (only the upper leaves seen) to 3 cm. long, slender, white setose-hairy, the hairs divaricate; blades to 10 by 6 cm., ovate, with blunt or rounded base and abruptly short-acuminate and acute summit, finely and regularly serrate, the teeth ovate, broader than long, acute with a whitish tip, the sinuses acute, very thin, 3-nerved from a little above the base, the upper surface densely and shortly rough-hairy, dark green, the lower surface grayish-green, more densely hairy but less rough, the venation finely reticulate, not prominent; spikes very numerous, simple or branching near the base, 15 to 20 cm. long, 5 mm. broad, densely flowered, the flowers divaricate, all the parts pilose with spreading white hairs; bractlets 2 and linear, slightly longer than the slender stipe, which is half the length of the broadly ovoid ovary, the style about equaling the ovary, the stigma mostly recurved.

Collected by G. H. H. Tate at Nequejahuira, Bolivia, alt. 8000 ft., May 15 to 24, 1926 (No. 645).

PHENAX BULLATUS Rusby, sp. nov. *Rami elongati graciles adscendentes subglabrati; folia lanceolato-ovata acuminata acuta ad basin rotundata, dentibus mucronulatis, pagina superiore bullata saepe nitente; bracteae ovaes obtusae concavae; pistillum sessile ovoideum, stylo elongato.*

Subglabrous; branches elongate, very slender, erect or strongly ascending, light red, terete, very leafy; stipules 3 mm. long, triangular-acuminate, scarious, reddish; petioles to 1 cm. long, very slender, minutely scurfy; blades to 3.5 by 1.5 cm., lance-ovate, with rounded base and acuminate and acute summit, serrate with mucronulate teeth, deep-green, the upper surface mostly bullate, often shining, with the venation impressed, very minutely puberulent, the lower surface mostly brown or reddish, densely papillose, the venation lightly prominent, the three ribs originating in the petiole, connected by slender crooked secondaries; heads spherical, nearly 1 cm. broad, reddish or rich-brown; bracts brown, scarious, 1.5 to 2 mm. long and more than half as broad, oval, obtuse, concave; staminate flower very shortly

stipitate, the calyx parted below the middle, the lobes 2 mm. long, faintly 3-nerved, broadly oval, the summit rounded and mucronate; stamens 4, longer than the calyx; rudimentary ovary minute, free from the stamens; pistillate flower sessile, the ovary less than 1 mm. long, ovoid, the style more than 3 mm. long, very slender.

Collected by O. Buchtien at Cotana, Bolivia, alt. 2700 m., in November, 1911 (No. 3158). "A shrub about 2 meters high." Also collected by G. H. H. Tate at Nequejahuiria, alt. 8000 ft., May 15 to 24, 1926 (No. 649). The species is very near P. ballotaefolius Wedd.

PHENAX FLAVIFOLIUS Rusby, sp. nov. Rami elongati graciles setosi; stipulae ovatae acuminatae acutaeque scariosae caducae; folia lanceolata acuminata acutaeque basi acuta serrata flavo-brunnea; pistillum oblanceolatum stipitatum pubescens.

Setose-hairy and slightly hispid; branches elongated, slender, reddish-brown, terete, narrowly sulcate, very leafy, the hairs white and widely spreading or divaricate; stipules caducous, 4 or 5 mm. long, ovate, acuminate and acute, brown, scarious, pilose; petioles to 2 cm. long, slender, red, setose, deeply channeled above; blades to 15 by 4 cm., lanceolate with a short-acuminate and acute base and a long-acuminate and acute summit, finely serrate with short acute teeth and sinuses; heads to 8 or 10 mm. broad, dense, brown; bractlets minute, hyaline; pistil short-stipitate, the ovary 1.5 mm. long, oblanceolate, the base tapering into the stipe, pubescent, obtuse, the style stout, tapering, pubescent, 2.5 mm. long; staminate flower not found.

Collected by G. H. H. Tate at Pitiguaya, Unduavi, Bolivia, alt. 5800 ft., May 7 to 15, 1926 (No. 726).

ALSINE YUNGASENSIS Rusby, sp. nov. Caules elongati debiles graciles glabri flavi nitentes; folia late sessilia ovata acuta apiculata tenuia; flores pauci solitarii penduli aut recurvi; sepala late ovata acuta; petala quam sepalis staminibusque paullo longiora; stamina stylos aequantia.

Glabrous; the stems elongated, weak and slender; branches elongated, ascending, yellow, shining; leaves sessile by a broad base, 2 to 3.5 cm. long, 1 to nearly 2 cm. broad, ovate, acute, minutely apiculate or mucronulate, light green, drying yellowish, very thin, the venation slender, crooked, ascending and meeting to form a conspicuous line close to the margin; flowers few, axillary, solitary, mostly recurved or pendulous on long peduncles; sepals 6 mm. long, broadly ovate, acute, thin, pale green, veiny; petals 8 mm. long, bifid, the divisions narrow; stamens shorter than the petals, about equalling the styles; ovary 2 mm.

long, obovoid, the styles 3, shorter than the ovary, the upper part somewhat recurved, the summits slightly thickened.

Collected by H. H. Rusby in Yungas, Bolivia, alt. 6,000 ft., in 1885 (Parke, Davis & Co. No. 1185, the type), distributed as "*S. cuspidata* Willd.?" Also collected by G. H. H. Tate at Pongo, alt. 12,000 ft., February 17 to March 1, 1926 (No. 159).

CERASTIUM BREVICARPICUM Rusby, sp. nov. Dense breviter-pilosum; caules crassiusculi ex basi dense ramosi; folia crassa, basalia lanceolato-oblonga obtusa inferne angustata in basin longum petioloideum, caulina deinceps minora et brevius petiolata; sepala oblanceolata obtusa petala parum excedentia; stamina quam petalis $1/3$ breviora pistillum subaequantia.

Densely pilose or subtomentose throughout, with stout hairs; stems mostly 3 to 5 cm. long, densely branching from the base, thickish; leaves thickish, the radical ones 3 cm. long, 8 mm. wide, the lower half being a long petiole-like base, the limb lance-oblong, obtuse, densely hairy and ciliate, the cauline leaves successively smaller and with shorter basal portions; principal veins strongly ascending, the venation coarsely reticulate; sepals thickish, 1 cm. long, oblanceolate, obtuse, tomentose; petals a little shorter than the sepals, shortly 2-lobed, the lobes obtuse; stamens two-thirds the length of the petals; ovary brown, 5 mm. long and more than half as broad, with rounded summit, 10-ribbed and finely many-nerved; styles 5, half as long as the ovary; mature pod not seen, but it opens by 10 equal, short, obtuse teeth.

Collected by G. H. H. Tate at the top of the Tipuani-Ancona-Sorata trail, alt. 16,500 ft., April 30, 1926 (No. 785). Nos. 21 and 820 represent the same species.

DRYMARIA LADEWII Rusby, sp. nov. In juventute minute puberulum; caules ramique gracillimi patuli; stipulae albidae lacerae; petioli filiformes; laminae ovatae obtusae mucronulatae basi truncatae vel subcordatae; flores pauci pedicellis filiformibus; sepala lanceolato-ovata rigida acuminata et acuta staminibus petalisque longiora; capsula globosa seminibus magnis.

Younger portions and inflorescence very minutely puberulent; stems elongated, very slender, the branches similar, divaricate or widely spreading; stipules whitish, irregularly lacerate, the divisions filiform; petioles of the largest leaves to 5 mm. long, filiform; blades very unequal, successively smaller upward, the largest 3 cm. long and nearly as broad, ovate, very obtuse, but minutely mucronate, with a truncate or shallowly cordate base, very thin, pale green,

glabrous, 3-nerved from the base, the venation slender, sparse; inflorescence cymose, very lax and few-flowered, the flowers on filiform pedicels; sepals 3 mm. long, rigid, pale green with whitish margins, lance-ovate, acuminate and acute; petals two-thirds as long as the sepals, white, very delicate, bifid, the divisions linear; stamens and pistil about equalling the petals; ovary globose, the style 3-fid about half-way; capsule splitting into 3 valves, the seeds large, brown.

Collected by G. H. H. Tate at Nequejahuira, Bolivia, alt. 8,000 ft., May 15 to 24, 1926 (No. 652, the type), and at Okara, alt. 7,500 ft., April 26 to 29 (No. 982). The species is very near D. pauciflora Bartl., but is not at all pilose like that species.

DRYMARIA STRICTA Rusby, sp. nov. Breviter pubescens; caules ramique elongati graciles erecti; stipulae setaceae; petioli breves lati; folia ovata latiora quam longa basi subtruncata apice breviter acuminata et acuta; sepala et stamina a petalis excessa; capsula sepala aequans.

Pubescent with short spreading hairs; stems to 3 dm. tall, slender and erect, like the branches; stipules very small, setaceous; petioles 1 or 2 mm. long, broad; blades to 12 mm. long, broader than long, ovate with a subtruncate base and an abruptly short-acuminate and acute summit, thin, drying yellowish, 5-nerved from the base; inflorescence, with its filiform erect branches and pedicels, pilose with divaricate hairs like the calyx; sepals 3 mm. long, oval, obtuse, pale green, rigid; petals exceeding the sepals, bifid, white, narrowed to the base; stamens about equalling the calyx; style trifid half-way down; capsule equalling the calyx.

Collected by G. H. H. Tate at Pongo de Quime, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 160). The species is very near to D. glandulosa Presl.

GUATTERIA SETOSA Rusby, sp. nov. Setoso-pilosa et scabra; folia subsessilia oblonga acuminata et attenuata superne glabra; flores solitarii axillares, pedunculo calyceae setosis; petala exteriora sepala paullo excedentia, interiora longiora margine ad apicem excavata, omnia obtusa.

More or less setose-hairy; branchlets much elongated, slender, harshly pilose or scabrous; leaves nearly sessile, the petiole about as broad as long, the blades to 14 by 3.5 cm., oblong with an obtuse base, the summit acuminate and ending in an attenuate point about 5 mm. long, glabrous above, sparsely pilose below with stiff appressed hairs, the venation lightly prominent beneath, the secondaries 15 to 18 on a side, widely spreading, the ends strongly upcurved and connecting near the margin; flowers axillary, solitary, the

peduncles 2 cm. long, setose like the sepals; calyx apparently valvate, coriaceous, the sepals 1 cm. long, broadly ovate, obtusish; petals coriaceous, the outer slightly larger than the sepals, short-pubescent or tomentose, probably valvate, obtuse, the inner longer and much broader than the outer, very obtuse, the margins slightly excavated near the summit, as though inclined to be 3-lobed, somewhat connivent; stamens densely massed, but not coherent, 1.5 mm. long, broadened upward, with a truncate summit; carpels forming a dense head 3 mm. broad.

Collected by G. H. H. Tate at Chuquini, Bolivia, alt. 3,000 ft., February 17 to March 1, 1926 (No. 1138).

DIOCLEA ORNITHORYNCHA Rusby, sp. nov. Pubescens pilis divaricatis vel retrorsis; petiolus brevissimus; foliola ovales apice in rostrum longum abrupte contracta; calycis tubus late campanulatus ferrugineo-hirsutus, dentes longi falcati adscendentes.

Pubescent with divaricate or somewhat retrorse hairs; stems rather stout, costate or strongly nerved; stipules not seen; petioles 7 or 8 cm. long, slender, narrowly channeled above; rachis 2 or 3 cm. long; petiolules 5 mm. long; terminal leaflet 15 by 8 cm., oval with a rounded base and a summit abruptly contracted into a curved beak-like acumination which is 2 cm. or more long, entire, very thin, the very slender midrib and secondaries lightly prominent beneath, the secondaries 5 or 6 on each side, strongly ascending, lightly curved, connected by a loose reticulation, the upper surface sparsely, the lower more densely pubescent, the veins pilose with stiff divergent hairs; lateral leaflets about equal, similar but inequilateral; peduncle and rachis each about 2 dm. long, the latter black-nodose from the fallen flowers. A single detached flower is present on my specimen. This has the pedicel 7 mm. long, slender; calyx-tube campanulate, 5 mm. long, 8 mm. broad, 5-ribbed, hirsute and ferruginous, the long calyx-tooth nearly 1 cm. long, falcate-ascending; corolla-bud beginning to open, 1 cm. long and a little broader; dissection material wanting.

Collected by G. H. H. Tate at Mapiiri, Bolivia, alt. 2000 ft., March 3 to April 9, 1921 (No. 479). The species is near to *D. rufescens* Benth., but the latter is wanting in the stiff divergent hairs on the veins of the lower leaf surface and has different flowers.

LUPINUS BUCHTIENII Rusby, sp. nov. Puberulus; caules ex basi numerosi prostrati vel adscendentes, ramosi et foliosi; stipulae lanceolatae abrupte attenuatae brummeae; foliola oblanceolata basi cuneata apice obtusa vel rotundata; racemi elongati simplices pedunculati; bracteae lanceolatae

acuminatae quam pedicellis filiformibus duplo longiores; calycis labia subaequalia, labio inferiore 3-denticulato; corolla subcaerulea.

Closely and finely puberulent; stems numerous from the summit of a long tap-root, prostrate or ascending, freely branching, 5 to 10 cm. long, slender, leafy, angled and nerved; stipules to 5 mm. long, lanceolate, abruptly contracted into an attenuate summit, thin, brown, erect; petioles very unequal, to 1 cm. long, filiform; leaflets mostly 7 or 9, sessile, the lower smaller, to 3 mm. long and 1 mm. wide or less, oblanceolate with cuneate base and blunt or rounded summit, entire, gray-puberulent, the venation obscure; racemes terminating the branches, long and slenderly peduncled, simple, mostly 5- to 10-flowered, the pedicels about half as long as the lanceolate acute bracts; lower lip of calyx 3 mm. long and about as broad, ovate, 5-nerved, minutely 3-dentate, the upper lip about as long, ovate, acuminate and acute, entire; corolla light blue, 7 mm. long; stamens 5 mm. long, the filaments united more than half-way; ovary 2.5 mm. long, lanceolate, the style exceeding the stamens, lightly curved; pod 1 cm. long, 5 mm. wide, oval, compressed, one margin thickened, tomentose, mucronate, 3-seeded.

Collected by Otto Buchtien at Unduavi, Bolivia, alt. 3500 meters, in November, 1910 (No. 2869, the type). Distributed as L. prostratus Ag., which it closely resembles. Also collected by G. H. H. Tate at Pongo, alt. 12,000 ft., February 17 to March 1, 1926 (No. 174).

LUPINUS TATEI Rusby, sp. nov. Cinereo-sericeus; caules alti crassi ramis adscendentibus; stipulae varie subulatae attenuataeque; foliola oblanceolata acuta basi acuminata; bractearum pars basalis late ovata, pars superior setacea; lobus calycis major ovatus acuminatus alii angusti acuminati et acuti.

Densely gray-sericeous throughout; only the upper branches seen, these 2 or 3 dm. long, ascending, rather stout, floriferous at the summit; stipules more than 1 cm. long, narrowly subulate and long-attenuate; petioles to 5 cm. long, slender, narrowly grooved above; leaflets apparently 7, sub-petiolulate, the outer successively smaller, the central to 6 by 1 or 1.2 cm., oblanceolate, acute with an acuminate base, entire, thin, densely sericeous on both surfaces; flowers loosely racemed, mostly 2 together; bracts in two parts, the basal broadly ovate, about 5 mm. long, the upper longer and setaceous; pedicels about 1 cm. long, slender; calyx-tube 3 mm. long, 5 mm. wide, obtusely 10-costate, the larger lobe 8 mm. long, ovate, long-acuminate and acute, the others narrower, 7 mm. long, acuminate and acute; vexillum orbicular, 1.5 cm. long and even broad-

er; alae obovate, equally long; keel 13 mm. long, finely many-nerved, ovate, obtusish, the summit darker; stamens about as long as the keel, connate two-thirds of their length, the anthers lanceolate, 2 mm. long; style 2 mm. longer than the stamens, the stigma bearded; pod 3 or 4 cm. long, 1 cm. broad, oblanceolate, compressed, hirsute, the edges thickened, mostly 5-seeded.

Collected by G. H. H. Tate on the road from Okara to Ancona, Bolivia, alt. 11,000 ft., April 29, 1926 (No. 855). The species is very near L. paniculatus Benth. and L. soratensis Rusby.

MEIBOMIA ADHAERENS Rusby, sp. nov. Dense albo-hispida; caules validi flexuosi erecti; stipulae late ovatae abrupte attenuatae longe pilosae quam petiolis longiores; foliola consimilia ovata obtusa minute apiculata; paniculae axillares et terminales laxiflorae; pedicelli recurvi; calycis labium superius quam inferiore fere duplo longius; legumen sub-7-articulatum suturis utrique invaginatis.

Densely hispid with slender white, shining, divergent hairs which are mostly hooked at the tip; stems herbaceous, rather stout, flexuous, yellowish, apparently erect; stipules about 7 mm. long, broadly ovate, abruptly contracted into an attenuation that is nearly as long as the body, thin, brown, nerved, long-pilose; petiole to 5 cm. long, slender, spreading, nerved, grooved on the upper surface, pilose, the rachis similar, 1 cm. long, the stipellae 4 mm. long, lance-linear, attenuate; leaflets 3, the petiolules shorter than the stipellae; leaflets alike, the lateral somewhat smaller, to 4.5 by 3 cm., ovate with a broad base and summit, the latter minutely apiculate, thin, pale green, sparsely pilose, the slender venation not prominent, the secondaries 5 or 6 on each side, at an angle of about 45°, little curved except at the ends, the venation coarsely reticulate; panicles axillary and terminal, elongated, little branched and very loosely flowered; pedicels filiform, recurved, 4 to 7 mm. long in flower, later slightly elongating; upper lip of calyx nearly twice the length of the lower, which is 3-lobed more than half-way, the lobes triangular, acute; vexillum 1 cm. long and broad, the claw short and very broad, cuneate; wings and keel shorter than the vexillum; filaments united for most of their length; only one immature pod seen, this 7-jointed, both margins indented but not equally, strongly hispid, the joints small, inequilaterally oval, a little longer than broad.

Collected by G. H. H. Tate at Sorata, Bolivia, alt. 10,000 ft., May 1, 1926 (No. 769).

MEIBOMIA ADPRESSA Rusby, sp. nov. Minute puberula; caules basi radicanter atque adscendentes, ramis gracilibus e-

longatis, dense foliosis; stipulae adpressae ovatae longe attenuatae; petioli basi dilatati; stipellae minutae subulatae; foliola ovalia obovata vel orbicularia; racemi terminales stricti pauciflori; legumina pauci-articulata, sutura ventrali paullo incisa dorsali alte sulcata.

Very minutely and closely puberulent; stems rooting at the base, then ascending, branching from below, the branches long and slender, ascending, densely leafy; stipules 4 mm. long, appressed, ovate, with a long-attenuate summit; petiole to 1 cm. long, stout, mostly erect, dilated at the base, the rachis a fourth its length; stipellae subulate, very small; leaflets 3, the petiolules 1 mm. long, broad; blades varying from orbicular to broadly oval or somewhat obovate, with a rounded summit and base, the lateral ones about two-thirds the size of the terminal, all deep green, thin but rigid, the margin thinly revolute, grayish-puberulent beneath, the venation prominent beneath, secondaries crooked, the finer venation strongly anastomosing; racemes terminal, long-peduncled, slender and strict, few-flowered; pedicels filiform, about 8 mm. long, erect and incurved; longer lip of calyx 4 mm. long and nearly equalling the stamens, ovate with a long-acuminate summit, the other three lobes similar and only a little smaller; perfect pods not seen, apparently 3-jointed, the ventral suture slightly and sharply notched, the dorsal deeply and widely intruded, the joints about 3 mm. long, 1.5 mm. wide, about twice as broad near the summit as near the base.

Collected by G. H. H. Tate at Mapiri, Bolivia, alt. 2000 ft., March 20 to April 9, 1926 (No. 468). The species is characteristic in its numerous subimbricated leaves, erect petioles and pedicels, and appressed stipules.

MEIBOMIA NUMMULARIA Rusby, sp. nov. Dense pilosa; caules ex basi lignosa ramosi gracillimi; stipulae divaricatae late ovatae attenuatae; petioli quam rhachide triplo longior; stipellae setaceae; foliola subrotundae supra strigosa subtus molliter pilosa; racemi axillares minimi pauciflori.

Densely pilose with soft white divergent hairs; stems branching from a woody base, in my specimen to 5 dm. long but probably growing much longer, the branches elongated, very slender; stipules 5 to 7 mm. long, divaricate, thin, brown, broadly ovate and attenuate, pilose, finely many-nerved; petioles to 3 cm. long, slender, thrice the length of the rachis; stipellae 3 or 4 mm. long, setaceous; leaflets 3, the petiolules less than 1 mm. long; leaflets very irregular in size, from 5 by 5 mm. to 2.5 by 2.5 cm., the terminal one a little larger and relatively broader than the lateral ones, all subrotund, thin, bright green, the upper surface bearing appressed hairs with enlarged base, the lower surface densely soft-pilose; secondaries 4 on each

side, strongly ascending, nearly straight; racemes axillary, very small and few-flowered, the flowers not yet developed in my specimen.

Collected by G. H. H. Tate at La Joya, Bolivia, alt. 5900 ft., April 25 to 26, 1926 (No. 1021).

MEIBOMIA SIMPLICIFLORA Rusby, sp. nov. Pubescens; rami graciles elongati; stipulae ovatae acuminatae et acutae patulae vel recurvae; petiolus quam rhachide triplo longior; foliola ovata obtusa vel apiculata pubescentia, pilis adpressis basi bulbosis; racemi elongati simplices vel subsimplices laxiflori; calycis dentes ovati acuminati; legumen sutura una alte altera paullo invaginatum.

Pubescent with short, fine, white hairs; stems slender, terete, reddish, the branches elongated and slender; stipules 5 mm. long, broadly ovate, abruptly long-acuminate and acute, brown, spreading or recurved; petiole 2 to 4 cm. long and thrice the length of the rachis, slender, the stipellae similar to the stipules, but half as large; leaflets 3, the terminal one from 4 by 2 cm. to 6 by 3 cm., ovate with a rounded base and acute or obtusish and minutely apiculate summit, thin, deep-green, sparingly pubescent on both surfaces, the hairs appressed, with bulbous bases, the secondaries 6 to 8 on each side, strongly ascending, lightly curved; lateral leaflets similar and about two-thirds as large, on petiolules about 1 mm. long; raceme terminal, elongated, simple or nearly so, loosely flowered; longer lip of calyx 3 mm. long, ovate, attenuate, the other teeth similar, about half as long, less attenuate; corolla absent; stamens 6 mm. long; pod mostly 5- or 6-seeded, nearly straight, 2 to 2.5 cm. long, 2 mm. wide, shortly stipitate; ventral sinus not at all or very little intruded, the dorsal sinus deeply so, the joints triangulate, hispid, very small.

Collected by G. H. H. Tate at Okara, Bolivia, alt. 7,500 ft., April 26 to 29, 1926 (No. 988).

MEIBOMIA TETRASPERMA Rusby, sp. nov. Hispidulum et pilosum; rami elongati graciles patuli; stipulae subulatae attenuatae 5-7-nervae; foliola ovata obtusa apiculata; paniculae magnae late patulae laxiflorae; pedicelli divergentes vel reflexi; calycis dentes acuminati et acuti; filamenta fere ad apicem conjuncta; legumen reflexum saepe 4-articulatum, sutura ventrali paullo, dorsali alte invaginata.

Minutely and sparsely hispidulous with very short, recurved hairs and a few long straight slender ones; stem herbaceous, very slender, apparently very long, with elongated and widely spreading branches; stipules 3 or 4 mm. long, subulate and attenuate, sharply 5- or 7-nerved; petiole to 3 cm. long, nearly filiform, the rachis more than half as long as the petiole; stipellae very small, the petiolules 2 or 3

mm. long, thick, pilose; blades very thin, pale-green, the terminal to 6 by 3.5 cm., rhomboidally ovate, blunt, minutely apiculate, the lateral ones considerably smaller, ovate, sparsely pilose with appressed hairs, the venation inconspicuous, the secondaries about 6 on each side, strongly falcate-ascending, rather crooked; panicles large, widely and sparsely branching, the branches filiform, loosely-flowered; pedicels 1 to 1.5 cm. long in flower, 2 cm. long in fruit, divergent or lightly reflexed; upper lip of calyx 1.5 mm. long, deeply 2-toothed, the teeth triangular-lanceolate, the lower 3-toothed, the lateral teeth much like the upper, the middle tooth a half larger, all acuminate and acute; vexillum nearly 1 cm. long, rose-colored, the claw very short, the keel and wings about two-thirds as long and nearly as long as the stamens, which are united nearly to the summit, shorter than the pistil; stigma capitate, flat; pod reflexed on the pedicel, mostly 4-jointed, the ventral suture slightly, the dorsal suture deeply intruded and almost meeting, the joints very much flattened, with thickened densely ciliate margins, the joints nearly 1 cm. long and half as wide, reticulately veined, the seed attached at the middle, the long axis of the seed parallel with that of the pod.

Collected by G. H. H. Tate at Okara, Bolivia, alt. 7500 ft., April 26 to 29, 1926 (No. 987).

OXALIS DENSISSIMA Rusby, sp. nov. Pubescens; caules dense caespitosi; stipulae brunneae tenues ovatae obtusae inferne ad petiolulum adnatae superne divaricatae; petioli albo-pilosi; foliola sessilia basi cuneata subtiliter obcordata; pedunculi erecti uniflori medio bibracteolati; calyx corollaeque concolores.

Finely pubescent; stems caespitose, very short, growing in dense masses with mosses; stipules 1.5 to 2 mm. long, ovate, obtuse, adnate to the base of the petiole, divaricate, brown, thin and hyaline; petioles to 1.5 cm. long, slender, white-pilose; leaflets 3, sessile, equal, 2 mm. long, 3 mm. wide, cuneate at the base, shallowly obcordate, pilose, rather thin; peduncles filiform, pilose, erect, 3 or 4 cm. long, 2-bracted about the middle, one-flowered, the bracts lance-linear, acuminate; sepals colored like the corolla, 5 mm. long, oblong, with rounded summit, finely nerved; corolla 14 mm. long, purple; stamens monadelphous, very unequal, the longest reaching to the middle of the corolla, the filaments short-pilose; ovary oval, about 2 mm. long; styles 4, as long as the ovary, distinct, slender; stigma capitate.

Collected on the Ladew Expedition by G. H. H. Tate at Copunco, Bolivia, alt. 10,000 ft., in March, 1926 (No. 383). Nos. 383 and 323 grow together and are badly mixed in the

specimens. No. 383 is well distinguished by its longer petioles, larger and thinner leaflets, smaller and thinner stipules of different form, and its non-thickening petiole base.

OXALIS TATEI Rusby, sp. nov. Molliter pubescens, pilis purpureo-brunneis vel ferrugineis; caules caespitosi erecti uniflori inferne stipulis crassis brunneis ovatis imbricatis dense obtectis, his cum basi adnata petioli post lapsum foliorum persistentibus, petiolo deinde in corpusculum durum inter stipularum bases accrescente; corolla calyxque purpurati.

Softly pubescent, the indumentum somewhat ferruginous or brownish-purple; stems gregarious, one or more cm. tall, the lower portions densely imbricated by persistent stipules, one-flowered; stipules 2 mm. long, ovate, acute, brown, thick and somewhat coriaceous, adnate to the base of the petiole, which eventually disarticulates at the point of union, the stipules and base of the petiole persisting, the latter enlarging and thickening to form a hard body between the stipules; free portion of petiole 3 mm. long; leaflets 3, subsessile, the terminal one a little larger, 2 mm. long, 3 mm. wide, triangular-obcordate with a shallow sinus, thick and somewhat fleshy, deep-green; peduncles about 2 cm. long, filiform, pilose, two-bracted about the middle; sepals 3 to 3.5 mm. long, lance-ovate, obtuse, somewhat unequal, colored like the corolla; corolla 13 mm. long, apparently purple; stamens monadelphous at the dilated bases, 5 of them 4 mm. long, the others 6 mm. long and pilose, those of either set sometimes unequal among themselves; pistil 2 mm. long, the oval ovary two-thirds of the length; styles 4, distinct, rather stout, spreading; stigmas capitate.

Collected on the Ladew Expedition by G. H. H. Tate at Cocopuncu, Bolivia, alt. 10,000 ft., March 24 to 29, 1926 (No. 323). The peculiar origin of the scales clothing the stem-bases sheds light on the relationship of the species of "*Oxalis*" with scaly rhizomes and scaly bulbs. Perhaps this species and *O. densissima* represent a genus not as yet segregated.

OXALIS VIRGATA Rusby, sp. nov. Puberula et parce ferruginea; caules lignosi erecti crassi foliosissimi; stipulae erectae lanceolatae acuminatae et acutae scariosae brunneae; petioli graciles subtus ad apicem glandula magna ornati; foliola 3 consimilia triangulari-obovata simu breviter lato lobis rotundatis ad apicem costae glandula magna notatis; pedunculi in axillis superioribus solitarii saepissime uniflori; sepala viridia; petala flava.

Puberulent and somewhat ferruginous; stems woody, stout, terete, erect, very leafy; stipules 2 or 3 mm. long, erect, brown, thin and scarious, lanceolate, acuminate and acute;

petioles about 1 cm. long, slender, erect or somewhat spreading, puberulent, with a large gland at the summit on the lower side; leaflets 3, often reflexed, sessile or nearly so, equal or the terminal one a little larger, 7 mm. long (to the summit of the midrib), 6 mm. broad, triangular-ovate, the terminal sinus broad and shallow, the summit of the lobes rounded, with a large round brown gland at the summit of the midrib on the lower surface, the upper surface deep-green, puberulent with few minute whitish hairs, the venation slightly prominent beneath, ferruginous and pubescent, the midrib very stout, the secondaries 3 or 4 on each side, ascending at about 45° ; peduncles few, solitary in the upper axils, mostly 1-flowered, occasionally 2- or 3-flowered, filiform, to 3 cm. or more long, bearing linear-attenuate brown scarious bracts; sepals 3 mm. long, thin, green, lanceolate, with an attenuate summit, the midrib strong; corolla yellow, 12 mm. long; stamens very unequal, the longest ones half the length of the corolla; dissection material and fruit wanting.

Collected on the Ladew Expedition by G. H. H. Tate at Cocopunco, Bolivia, alt. 10,000 ft., March 24 to 29, 1926 (No. 282). The species is very characteristic because of its tall, stout, woody stems, densely clothed with leaves on short erect petioles.

ALCHORNEA MEGALOSTYLIS Rusby, sp. nov. Breviter albo-pubescent; caules petiolique rubri; folia crassa ovali-ovata, basi rotundata, apice abrupte breviter et obtuse acuminata, obscure sinuato-dentata; spicae foemineae axillares solitariae breves graciles pauciflorae; styli 2 rubri crassi pubescentes complanati valde recurvi quam ovario multo longiores; spicae masculae graciles laxae ramosae.

Pubescent with short white hairs; stem terete, reddish; stipules not seen; petioles to 5 cm. long, stout, reddish, nerved; blades to 15 by 8 cm., ovate or oval, with rounded or blunt base and very abrupt, short, obtuse acumination, shallowly sinuate-dentate, thickish and rigid, pale-green, above very shortly and sparsely pubescent on the veins, which are slightly prominent, more pubescent beneath, with the red venation very stout and prominent, 3-nerved, the secondaries 4 or 5 on each side, strongly ascending and lightly falcate, connected by numerous straightish tertiaries and strongly looped together near the margin, the finer venation strongly anastomosing; pistillate spikes axillary, shorter than their leaves, simple, slender, very loosely flowered; calyx white, tomentose, deeply 4-parted, about one-third the length of the white tomentose ovary, which is broadly ovoid, about 1 mm. long; styles 2, thick and fleshy, red, pubescent, flattened, strongly recurved, much longer than the ovary; staminate plant more pubescent

and the leaves ciliate, the spikes loosely branched, very slender, the flowers glomerate at the nodes; calyx 2-parted; stamens 4 or 5, not united.

Pistillate plant collected by M. Bang near Coroico, Bolivia, August 6, 1894 (No. 2375, the type). Staminate plant collected by G. H. H. Tate at Nequejahuira, alt. 8000 ft., May 15 to 24, 1926 (No. 646).

PAULLINIA TATEI Rusby, sp. nov. Glabra; ramuli graciles rubelli 3-angulati; petioli graciles 3-angulati; foliola ovali-ovata basi in petiolum breviter producta apice obtusa remote sinuato-dentata; racemi axillares simplices, pedunculis elongatis recurvatis apice cirrhiferis; capsula obtuse triangularis parce lobata.

Glabrous throughout; branches elongated, slender, reddish brown, triangular; leaves trifoliolate, the petioles 4 cm. long, slender, triangular; lateral petiolules 2 or 3 mm. long, the terminal a little longer; lateral leaflets 7 by 4 cm., oval or slightly ovate, with very slightly produced base and obtuse summit, sinuately dentate with few very short blunt teeth, slightly shining, the venation impressed above, prominent beneath, the secondaries about 7 on each side; terminal leaflet somewhat larger, lightly obovate; racemes axillary, mostly simple, on elongated, slender, recurved peduncles, tendril-bearing at the summit, the rachis densely fruited or nodose from the fallen fruits; capsule obtusely triangular and lightly 3-lobed, with a broad flat summit and a short thecaphore at the base, 11 or 12 mm. broad and not quite so long, red; seed 8 mm. long, obovoid with a rounded summit, deep purple, shining, the aril light brown, papillose, cup-shaped, the margin truncated and sometimes irregularly ruptured, about half the length of the seed.

Fruiting specimen collected by G. H. H. Tate at Guanai, Bolivia, alt. 1800 ft., April 14 to 16, 1926 (No. 553).

SERJANIA LYRATA Rusby, sp. nov. Breviter ferrugineo-tomentosa; rami graciles 6-costati; laminae foliorum quam petiolis sub-6-plo longiores bipinnatae; foliola lanceolata-oblonga basi breviter acuminata apice subacuta argute serrata utrinque ferrugineo-tomentosa; paniculae graciles; carpellae maturae tenues parce puberulae.

Shortly ferruginous-tomentose; branches rather slender, reddish-brown, 6-costate, unarmed; petioles about one-seventh the total length of the leaf, about 15 mm. long; blade bipinnate, 10 or 12 cm. long and nearly as broad at the base, the lower pinnae on short slender petiolules, their lateral pinnules 2 to 2.5 cm. long and half as broad, the lower on short petiolules, lance-oblong with an abruptly short-acuminate base and acutish summit, serrate with a-

cute teeth, occasionally the lowest pinnule pinnate, the terminal pinnule ovate with abruptly acuminate base, much larger than the lateral ones; upper pinnae sessile, occasionally with a single basal pinnule, similar to the terminal pinnules of the lower pinnae; terminal pinna lance-ovate, long-acuminate, variously incised, serrate, or pinnatifid; leaves thin, ferruginous-tomentose on both sides, the venation slender, abundant; panicles narrow, short-peduncled, the peduncles angular; fruiting pedicels 4 mm. long, slender, the carpels nearly 2.5 cm. long, 9 mm. broad, with a rounded base, light-green, thin, slightly puberulent, the veins horizontal or somewhat depressed, the summit rounded, the seed small, near the summit.

Fruiting specimen collected by G. H. H. Tate at Okara, Bolivia, alt. 7500 ft., April 26, 1926 (No. 991).

WALTHERIA LADEWI Rusby, sp. nov. Dense et molliter cinereo-stellato-tomentella; caules graciles erecti subsimplices; stipulae angustae basi paullo dilatatae; folia ovata crenato-dentata basi rotundata apice obtusa vel mucronulata; racemi breves secundi recurvati; calycis dentes a basi acuminati.

Densely, closely, and softly gray-stellate-tomentellous throughout; stems to 6 dm. high, slender, erect, simple or little branched, the branches erect, terete; stipules not seen; petioles 3 to 5 mm. long, slender, slightly dilated at the base; blades to 30 by 13 mm., ovate with a broadly rounded base and a blunt, minutely mucronulate summit, finely crenate-dentate with short broad mucronulate teeth, the upper surface gray-green, very densely tomentellous, the venation finely channeled, the lower surface gray, with the slender midrib and secondaries sharply prominent, the secondaries 5 or 6 on each side; flowers secundly racemose in the axils, the racemes much shorter than their leaves, shortly and slenderly peduncled and recurved; bracts 4 or 5 mm. long, imbricated, lanceolate, acuminate, hirsute, ciliate, thickish; calyx turbinate, 5 mm. long, toothed nearly half-way, the tube 10-nerved, the teeth acuminate from the base; petals 2 mm. longer than the calyx; filaments 1 mm. long, completely coherent, the anthers 1 mm. long, minutely mucronate; style pilose, 1 mm. longer than the stamens, plumose at the summit.

Collected by G. H. H. Tate at Mapiiri, Bolivia, alt. 2000 ft., March 30 to April 9, 1926 (No. 470). The species is near *W. americana* L.

CAOPIA PARVIFOLIA Rusby, sp. nov. Puberula, in inflorescentia glandulosa; folia lanceolata in petiolum brevissimum abrupte contracta breviter acuminata et acuta supra glabra subtus parce ferruginea; pedicelli fructiferi grac-

iles; sepala reflexa lanceolata acuminata et subacuta; fructus insigniter glandulosi.

Sparsely puberulent, the inflorescence glandular; branches very slender, angled; petioles very short, margined; blades to 5 by 2 cm., lanceolate, very abruptly contracted into a short petiole-like base and an abruptly short-acuminate and acute summit, thin, yellowish-green, above glabrous, beneath finely puberulent with appressed hairs and somewhat ferruginous, the venation slender, lightly prominent beneath, the secondaries 6 or 8 on each side; panicles terminating the branches, small and loosely fruited, the pedicels slender, 2 or 3 mm. long; sepals reflexed in fruit, 1.5 to 2 mm. long, lanceolate, acuminate, acutish; fruit 7 mm. long, mostly broader than long, strongly glandular, mostly bearing the short and slender recurved styles; the remains of a flower show a yellow petal, 7 mm. long, densely covered with red-brown glands.

Fruiting specimen collected by G. H. H. Tate at Chuquini, Bolivia, alt. 3000 ft., April 17 to 19, 1926 (No. 1128).

PASSIFLORA TATEI Killip & Rusby, sp. nov. Pilosula; caules trigoni; stipulae lineari-falcati purpurascentes; petioli eglandulosi; laminae oblongae et latioris apice truncato obsolete 2-3-lobato; pedunculis solitarii vel geminati graciles; bractae setacei 2-3-fidae; flores circa 3 cm. lati; petala anguste linearia alba; corona biseriata exterior ligulata interior filiformis.

Herbaceous vine; stem trigonous, densely pilosulous; stipules narrowly linear-falcate, 7 to 10 mm. long, 0.5 mm. wide, purplish; petioles 1 to 2.5 cm. long, glandless, pilosulous; leaves oblong or suborbicular in general outline, 3.5 to 10 cm. long, 3 to 7 cm. wide, obsoletely 2- or 3-lobed at the truncate apex, rounded or shallowly cordate at base, entire, 3-nerved, subcoriaceous, lustrous and minutely puberulous above, dull red, densely pilosulous on the nerves and veins beneath; peduncles solitary or in pairs, 3.5 to 4 cm. long, slender; bracts dissitate, 6 to 9 mm. long, setaceous, deeply 2- or 3-cleft, purplish; flowers 2.5 to 3.5 cm. wide; calyx-tube broadly campanulate, 7 to 10 mm. wide at base; sepals linear or lanceolate, about 1.5 cm. long, 0.4 cm. wide, obtuse, greenish-white; petals narrowly linear, 7 to 9 mm. long, 1.5 mm. wide, obtuse, white; corona in two series, the outer narrowly liguliform, about 8 mm. long, the inner filiform, 2 to 3 mm. long; operculum closely plicate, about 1.5 mm. high, denticulate, incurved; nectary ring annular; limen cupuliform, about 2 mm. high; ovary globose, densely lanate-villose; fruit globose, seeds ovate-orbicular, transversely sulcate.

Type collected at Nequajahuira, Cordillera Real, Bolivia, alt. 2500 meters, May 15 to 24, 1926, by G. H. H. Tate (No.

654). This species has the general appearance of P. bauhiniifolia H.B.K., a species known only from the mountains of central Ecuador, and the two are obviously closely related. In P. tatei the bracts are deeply cleft; in P. bauhiniifolia entire; the calyx-tube is much broader in P. tatei, and the petals are narrowly linear, rather than ovate-lanceolate.

CAIOPHORA MACROPHYLLA Rusby, sp. nov. Breviter setosa pilis saepissime reflexis; caules volubiles cinereo-pubescentes; petioli basi abrupte dilatati et inter se connati; laminae ovatae cordatae pinnatifidae lobis utrinque circa 4; pedunculi volubiles; sepala pinnatifida quam petalis subtriplo brevioribus; stamina inaequalia.

Setose with short and weak, mostly reflexed prickly hairs; stems rather stout, twining, terete, gray-hairy; petioles (only the upper ones seen) 3 or 4 cm. long, the bases abruptly dilated and connecting, the upper surface narrowly and deeply channeled; blades to 14 by 9 cm., ovate, cordate, pinnatifid, the lobes about 4 on each side, ovate, acutish, irregularly and shallowly dentate, the sinuses obtuse or the upper acute, very thin, bright-green on both surfaces, sparsely setose on both surfaces, the setae very unequal, the veins beneath densely setose-pilose, the venation weak, coarsely reticulate; peduncle terminal, to 3 dm. long, stout, twining, retrorsely setose; sepals 1 cm. long, lanceolate, incisely pinnatifid, some of the teeth gland-tipped, bright-green, setose-pilose; corolla light-scarlet, setose-pilose, the petals 3.5 cm. long, broadly oval, very veiny; stamens numerous, unequal, some of them two-thirds the length of the petals, the filaments filiform, the anthers elliptic, about 1 mm. long; pistil not seen.

Collected by G. H. H. Tate at Pongo de Quime, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 185). The species is notable for its ample bright-green leaves and large handsome flowers.

BEGONIA SUBRECTANGULA Rusby, sp. nov. Caules cinerei papilloosi; stipulae obtusae ovatae ex basi lata; folia tenuia late ovata abrupte et brevissime acutata, minute serrulata supra glabra subtus dense lepidota, costa a petiolo fere ad angulam rectam divergente, lobo basali rotundato in latitudine laminam propriam fere aequante.

Stems coarsely angled, gray, papillose; stipules sessile by a broad base, to 2 cm. long, 1 cm. wide, ovate, obtuse, entire, spreading or reflexed, thin and membranaceous, brown and veiny; petiole to 3 cm. long, slender, gray, nerved, lightly papillose; total length of blade 6 to 12 cm. by 3 to 6 cm. wide, the midrib nearly at right angles to the petiole and 4 to 8 cm. long, the main body of the leaf broadly ovate, very abruptly contracted into a short and acute point,

the basal lobe rounded, nearly as wide as the main portion, the sinus deep, broad, acute, the margin finely serrulate, the leaf thin, deep-green, glabrous, but densely lepidote on the lower surface, the venation slender, sharply prominent on both sides, the basal nerves about 9, one or two secondaries from the lower half of the midrib, strongly ascending, nearly straight; pedicels filiform, nearly 3 cm. long; staminate flower with sepals 2, subequal, broadly ovate, cordate, nearly 1 cm. broad, thin and petaloid, about 20-nerved, the nerves faint; petals none; stamens numerous, distinct or barely united at the base, the filaments filiform, scarcely 1 mm. long, the anthers linear-oblong, 2 mm. long, obtuse. The plant is apparently dioecious, no pistillate flowers being found.

Collected on the Ladew Expedition by G. H. H. Tate, May 15 to 24, at Nequejahuira, Bolivia, alt. 8000 ft. (No. 656). The species seems to be near B. sanguinea Raddi.

BEGONIA UNILATERALIA Rusby, sp. nov. Furfuraceo-tomentosa et ferruginea; stipulae lanceolatae acuminatae in caudam longum filiformem; folia oblique ovata, abrupte breviterque acuminata, margine irregulariter leviterque crenato-dentato, sinu basilari fere obsoleto, costa a petiolo sub angulo circa 135° ; pedicelli elongati filiformes; petala exteriora sepala fere aequantia et valde simulantia, ovata et obtusa.

Scurfy-tomentose with short, thick, ferruginous hairs; stems very flexuous, coarsely angled, light-brown; stipules brown, thin and scarious, unequal, the longest about 12 mm. long, lanceolate from a broad base, acuminate and bearing a terminal filiform appendage, finely nerved; petiole slender, 3 or 4 cm. long, scurfy-tomentose; blades to 7 by 3 cm., the midrib 6 cm. long, meeting the petiole at an angle of about 135° , the blade obliquely ovate, the basal lobe rounded, the sinus almost wanting, the summit abruptly short-acuminate and acute, the margin irregularly and shallowly crenate-dentate, the teeth mostly acute, the leaf thin, sparsely scurfy on the veins above, scurfy-tomentose on the veins beneath, finely lepidote, the nerves about 9, from the base, with 2 or 3 secondaries ascending strongly from the midrib; inflorescence (only pistillate flowers seen) scanty and lax, the flowers on long filiform pedicels, the 2 outer sepals subequal, obliquely ovate, 1 cm. long, 6 mm. wide, obtuse, serrate, thin, nerved; petals of similar texture, unequal, the outer ones nearly equalling the sepals and much like them, the inner 3 lance-ovate, obtuse, entire or slightly serrate; ovary and its 2 larger wings ferruginous-tomentose, ovoid, 8 mm. long and nearly as broad, the largest wing 8 mm. long and broad, its upper margin nearly straight and almost horizontal with the surface of the ovary, obtuse at the end, whence it curves regularly to a point slightly be-

low the base of the ovary, the margin lightly dentate, the second wing 3 mm. wide at the summit, whence it narrows gradually and slightly, its lower end meeting the primary, along its inner margin is a narrow, brown, thickened line, the third wing is thin and hyaline, irregular and incomplete; styles 3, slightly united at the base, 5 mm. long, 2- or 3-cleft nearly to the base, the branches again cleft or variously branched, the branches nearly smooth, tortuous or sinuous, flattened, stout and tough, thickened upward, obtuse.

Collected on the Ladew Expedition by G. H. H. Tate at Nequajhuira, Bolivia, alt. 8000 ft., May 15 to 24, 1926 (No. 657).

PARSONSIA SATUREIODES Rusby, sp. nov. Glanduloso-pubescent, pilis patulis; rami graciles foliosi; folia opposita sessilia linearia acuta basi angustata integra glabra; pedicelli axillares solitarii graciles erecti, floribus reflexis; calyx infundibulariformis 6-costatus hispidus calcare brevi rotundato, dentibus 6 triangularibus.

Glandular-hairy; densely branched, the branches erect or ascending, slender, 5 to 10 cm. long, shortly and coarsely glandular-hairy, the hairs spreading or divaricate; leaves numerous, opposite, sessile, to 2 cm. long and 3 mm. wide, linear, acute, narrowed to the base, entire, glabrous, thickish, the midrib stout on the lower side, the venation obscure; pedicels solitary in the axils, slender, erect, about two-thirds the length of their leaves, slightly thickened upward; flowers more or less reflexed on the summit of the pedicel; calyx (in flower) about 5 mm. long, about 1 mm. wide at the summit, nearly straight, infundibular, about 6-ribbed, hispid, the basal sac very short and rounded, the teeth six, about one-sixth of the total length, triangular, acute, with acute sinuses, two teeth a little longer and each with a smaller tooth at the side; petals 6, red, subequal, 2 mm. longer than the calyx, adnate to its summit, oblanceolate, obtuse, the claw rather broad, the basal glands very small; stamens somewhat unequal, reaching to the base of the calyx-lobes, the anthers oval; seeds 6, 1.5 mm. long, irregularly oval, flattened.

Collected by G. H. H. Tate at Rio Chimate, Bolivia, alt. 1900 ft., April 10 to 14, 1926 (No. 541).

BRACHYOTUM BARBIFERUM Rusby, sp. nov. Scabrum et leviter strigosum; rami rubelli anguste 4-alati alis hispidis; ramuli infra nodos saepe setas glomeratas gerentes; folia lanceolato-oblonga apice obtusiuscula vel saepius apiculata.

Scabrous and somewhat short-strigose; branches red-purple, quadrangular, the angles narrowly winged, the wings hispid with short ascending hairs; branchlets bearing, on

the internodes or usually just below the petioles, occasional pairs of tufts or fascicles of coarse unequal setae; petioles of the pair often unequal, to 1.5 cm. long, slender, scabrous with short stout appressed hairs; blades to 6 by 2 cm., or narrower, lance-oblong with obtuse or acutish base and obtusish minutely apiculate summit, entire, thickish and rigid, 3-ribbed from the summit of the petiole, with a pair of secondary ribs from near the base of the outer ones, the ribs narrowly channelled on the upper surface, which is hispid in four bands between the ribs and near the margins, with five glabrous bands at and beside the ribs; ribs and secondaries prominent on the lower surface, the secondaries about 40, with smaller intermediate ones, widely spreading and strongly falcate to meet in a sinuous line between the ribs; panicles terminating short branchlets, very slenderly peduncled, their branches and branchlets strictly opposite, the rachis dilated at the point of branching; young buds ovoid, acute, the calyx-teeth acute; flowers not seen.

Collected by G. H. H. Tate at Cocopunco, Bolivia, alt. 10,000 ft., March 24 to 29, 1926 (No. 362, the type); also, without inflorescence, at the same time and place, No. 331.

PERNETTYA Densa Rusby, sp. nov. Caules lignosi ramosissimi juventute leviter pilosi; folia sessilia basi angustata, coriacea oblonga obtusa crenulato-dentata; pedicelli fructiferi graciles divaricati; sepala rubella rigida quam fructu 5-lobato dimidio breviora.

Young stems sparsely short-pilose; stems woody, diffusely branched, the branchlets mostly 2 to 4 cm. long, densely crowded, very leafy, reddish; leaves sessile but with a narrowed petiole-like base, coriaceous, thick and rigid, oblong and obtuse, to 7 by 2 mm., pale-green above, reddish or ferruginous beneath and on the shallowly crenulate-dentate margins, the midrib very stout and prominent beneath, the secondaries erect or strongly ascending, crooked; flowers not seen; fruiting pedicels 2 to 4 mm. long, slender, spreading or mostly recurved, reddish; sepals puberulent, reddish, thick and rigid, about half the length of the fruit, ovate, acute; fruit above 4 mm. broad and shorter than its breadth, 5-lobed, glabrous or puberulent when young, the stout persistent style less than half the length of the fruit.

Collected by G. H. H. Tate at Cocopunco, Bolivia, alt. 10,000 ft., March 24 to 29, 1926 (No. 283). The species is apparently a shrub less than a foot high.

PERNETTYA SCHIZOSTIGMA Rusby, sp. nov. Rami numerosi erecti aut adscendentes nigrescentes breviter setosi; folia oblonga obtusa breviter obtuseque serrata; flores in axillis superioribus solitarii; stylus brevis superne incrassatus stigmate 5-lobato.

Much-branched, the branches short, slender, erect or ascending, somewhat crowded, blackish, sparsely clothed with short, stout bristles; leaves sessile, but having a very short petiole-like base, about 15 mm. long by 3.5 to 4 mm. wide, oblong, obtuse, the recurved margin serrate with short obtuse teeth, thick and rigid, pale-green, glabrous, the midrib and sometimes the veins impressed above, very strong and prominent beneath, the secondaries 3 or 4 on each side, erect or strongly ascending, very crooked, irregularly and sparsely anastomosing, sometimes with several bristly hairs on the midrib; flowers solitary in the upper axils, the peduncles about half as long as the leaves, angled, subulate-bracted, bristly; sepals 2 mm. long, ovate, spreading, thick and veiny, mucronate and acute; corolla white, 4 or 5 mm. long, two-thirds as wide, the teeth short, obtuse, recurved; filaments 2 mm. long, abruptly dilated and concave at the base, tapering upward, attached below the middle of the anther, which is less than 1 mm. long, broadly ovoid with a rounded base, slenderly 4-awned at the summit, the pores looking upward and slightly inward; ovary 2.5 mm. long and broad, green, the style a little larger, stout, thickened upward, the stigma shortly 5-lobed, the lobes spreading; fruit red, papillose, 1 cm. broad and not so long.

Collected by G. H. H. Tate, on the Ladew Expedition, at Pongo, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 198).

"Gaultheria martaensis Rusby" proves, on re-examination, to be a species of Pernettya, perhaps a form of P. Pentlandii DC.

VACCINIUM TATEI Rusby, sp. nov. In partibus juvenilibus minute puberulum; rami dense ramosi, ramulis adscendentibus rubellis; laminae quam petiolis recurvis vel tortis 5-plo longiores ovaes obtusae coriaceae subtus ferrugineae; pedicelli crassi quam fructu dimidio breviores.

Young portions minutely downy; stems densely branched, the branchlets ascending, slender, ferruginous or reddish, mostly 3 to 6 cm. long, densely leafy; petioles about 1.5 mm. long, mostly recurved or twisted, stout; blades 8 by 5 mm., oval, obtuse, coriaceous, shallowly sinuate-dentate (or entire toward the base), pale-green above, ferruginous beneath, the venation faintly impressed above, stout and prominent beneath, the secondaries 3 to 5 on each side, crooked, uniting to form a line near the margin; fruits few at the summit of the branchlets, purple, the pedicels stout, crooked, less than half the length of the fruit, which, in the dried state, is 3 or 4 mm. in diameter, globose; calyx-teeth short and broad, acute.

Collected by G. H. H. Tate at Pongo, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 199). The species is

apparently a low, much-branched shrub.

RAPANEA DENTICULATA Rusby, sp. nov. Subglabra; ramuli cicatricibus foliorum asperati; folia sessilia oblonga vel oblanceolata margine revoluta et prope basin denticulata, glabra rugulosa; sepala quam fructu dimidio breviora triangulari-ovata adpressa.

Subglabrous; branchlets short, stout, coarsely and irregularly angled, roughened with sharply projecting leaf-scars; leaves sessile, but with narrower petiole-like bases, from 7 by 3 cm. to 10 by 4 cm., oblong or mostly slightly oblanceolate, acute, the margin sharply revolute, minutely denticulate, increasingly so toward and upon the petiole-like base, thick and rigid, sometimes slightly scurfy on the midrib above, otherwise glabrous, but the extremely fine wrinkles resembling trichomes or papillae; midrib slightly impressed above, prominent beneath, the rest of the venation lightly prominent above, the secondaries about 15 on each side, slender, crooked; bracts triangular-subulate, thick and rigid; flowers not seen; fruiting-calyx closely appressed, the sepals thick and rigid, keeled, nearly half the length of the fruit, triangular-ovate, acute; fruit sessile, about 5 in a cluster, mostly 5 mm. long and 4 mm. wide, oval, tipped with the strong style-base, brown, faintly nerved, finely wrinkled-papillose.

Collected by G. H. H. Tate, on the Ladew Expedition, at Rio Aceromarco, Bolivia, alt. 10,800 ft., May 24 to 28, 1926 (No. 706). The species is peculiar in its denticulate leaf-bases. It is near *R. latifolia* (R. & P.) Mez, but the fruit characters and the denticulation of the leaf are very different.

GENTIANA TATEI Rusby, sp. nov. Glabra; caules graciles erecti simplices foliosi; folia basalia oblanceolata basi angustata obtusa, caulina a basi amplexante sensim ad apicem angustata; cymae sessiles pauciflora vel multiflora, pedicellis brevibus confertis anguste 4-alatis; calyx quam corolla dimidio brevior, lobis quam tubo duplo longioribus; corollae tubus quam lobis latis rotundatis duplo longior.

Glabrous; stems slender, erect or ascending, simple, 15 to 30 cm. long, leafy; root-leaves 2 cm. or more long, 3 or 4 mm. wide, oblanceolate, obtuse, tapering gradually to the base, the stem-leaves sessile with clasping base, from which they taper gradually and regularly to the summit, which is either acute or obtuse, mostly about 2 cm. long, narrowly linear, very thin, finely 7- to 9-nerved, those at the base of the cymes being relatively broader; cymes simple or corymbose, several- to many-flowered, sessile, the pedicels 8 to 12 mm. long, slender, slightly thickened upward, 4-angled, the angles bearing narrow membranous hyaline marg-

ins; flowers 13 to 17 mm. long, about 1 cm. broad at the mouth; calyx a little more than half the length of the corolla, divided two-thirds of the way, the tube broadly campanulate, 8-nerved, the sinuses broad and obtuse or rounded, the lobes triangular and tapering regularly from the base to the acute summit, apparently pale-green; corolla campanulate, apparently white, pink, or possibly yellowish, lobed a third of the length, the lobes very broad and rounded, entire, minutely apiculate, without folds in the sinuses; stamens nearly equalling the corolla, attached at its base, distinct, the filaments stout, broad and flattened, attached broadly to the lower half of the blackish anther, which is 1 mm. long, ovate, and obtuse; pistil equalling the corolla, the ovary lanceolate, the style very short, the stigmas small, strongly recurved.

Collected by G. H. H. Tate at Alaska Mine, Bolivia, alt. 13,700 ft., March 1 to 4, 1926 (No. 65).

DURANTA RECURVISTACHYS Rusby, sp. nov. Partes juveniles pubescentes; ramuli divaricati aut recurvi, racemi vel paniculae terminales recurvi; folia ovalia vel ovata, abrupte acuteque angustata, in basin petioloideum abrupte contracta, serrata; pedicelli brevissimi reflexi vel torti; corollae tubus quam calyce duplo longior.

Inflorescence, younger portions, etc., pubescent; branches stout, terete, the branchlets divaricate and somewhat recurved, the supra-axillary spines very short, stout, straight, pungent; stem-leaves to 8 by 5 or 6 cm., oval or ovate, very abruptly, shortly, and acutely pointed at the summit and very abruptly contracted into a petiole-like base about 1 cm. long, coarsely serrate with short and broad mucronate teeth, rather thick, deep-green and sparsely and obscurely pubescent above, where the slender venation is very lightly impressed, the lower surface yellowish-green, pubescent on the veins, which are yellowish, slender, and prominent, the secondaries about 5 on each side, falcate and somewhat crooked; leaves of the branchlets mostly 5 by 2 cm., oval, abruptly short-acuminate at both ends, acute, entire or with a few obscure teeth, otherwise like the stem-leaves, but more pubescent; inflorescence either simple, slender, loosely flowered, recurved racemes or panicles terminating the branchlets, their branches similarly racemose, nodose where the flowers or fruits have fallen, some of the flowers subtended by very small lance-linear acute bracts; pedicels very short, mostly reflexed or twisted; calyx about 6 mm. long, the teeth about 1 mm. long, erect, subulate; corolla-tube twice the length of the calyx, the exerted portion strongly recurved, the limb abrupt, 8 to 10 mm. broad, the lobes reflexed; fruit 1 cm. long and nearly as broad, ovoid, mucronate, brown, somewhat shining.

Collected by M. Bang in Bolivia, probably near Cochabamba (No. 1798) and distributed as D. Plumieri Jacq., but certainly not that species. Buchtien's No. 314, collected in South Yungas, at an altitude of about 7000 ft., June 12, 1906, "a shrub of 4 or 5 meters", is probably of this species. Specimens collected by G. H. H. Tate at Okara, alt. 7500 ft., April 26 to 29, 1926 (No. 910), apparently represent a distinct and undescribed species, but flowers are wanting. The branch-leaves have slender petioles 1 to 1.5 cm. long, the young growth is ferruginous-tomentellous, the pedicels are slender, and the fruits are as broad or broader than long and more strongly and stoutly beaked.

LANTANA TENUIFOLIA Rusby, sp. nov. Strigosa; aculei parvi graciles acuti recurvi; rami graciles adscendentes; folia petiolata ovata acuta, utrinque breviter acuminata, pilis albidis adpressis ex basibus bulbosis viridibus vestita; pedunculi elongati graciles erecti; capitula lata densiflora arcte involucrata; flores strigosi.

Armed with small, slender, recurved, pungent prickles and more or less strigose throughout; stems elongated, irregularly angled or sulcate above, the branches elongated, strongly ascending; petioles to 2 cm. long, grooved above; blades (which turn black in drying) to 10 or 12 by 5 cm., ovate, very abruptly short-acuminate at both ends, acute, irregularly and finely crenate-dentate, the teeth short, obtuse or acutish, the sinuses narrow and acute, thin, deep-green, strigose with stiff, appressed, white hairs, each from a large bulbous green base, the venation lightly prominent beneath, the secondaries about 8 on each side, ascending at about 45°, little curved; peduncles to 15 cm. long, erect or strongly ascending, very slender; heads to 2 or 3 cm. broad, densely flowered, strongly involucrate by a circle of closely appressed reduced leaves; flowers strigose, about 1 cm. long, the tube contracted to about half its diameter near the limb.

Collected by H. H. Rusby in the Bopi River valley, Bolivia, alt. 3000 ft., September 11, 1921 (Mulford No. 653, the type) and by G. H. H. Tate at Mapiri, alt. 2000 ft., March 30 to April 9, 1926 (No. 469). The species is very near L. tiliaefolia Cham.

HEDEOMA ADSCENDENS Rusby, sp. nov. Cinereo-puberula et asperula, pilis crassis albidis; caules graciles decumbentes, ramis numerosis erectis; folia ovata obtusa obtuse dentata basi rotundata; pedicelli brevissimi; calyx longe pilosus.

Gray-puberulent and roughish, with short, stout, white, divaricate hairs; stem slender, more or less decumbent, diffusely branched, the branches erect, 3 to 5 m. long, the

internodes mostly longer than the leaves; petioles 1 to 1.5 mm. long; blades to 4 by 3 mm., ovate, with rounded base and blunt summit, thickish, shallowly and obtusely dentate, the venation coarse and stout, the secondaries about 3 on each side; flowers mostly solitary in the axils of the upper leaves, some of these reduced to bracts; inflorescence white-pilose with rigid hairs; pedicels about 1 mm. long; calyx-tube 2.5 mm. long, infundibular, the lower half turgid, strongly ribbed, the limb divided nearly to the base, the teeth long-pilose, subulate and very acute, subequal, the lower somewhat longer; flowers not seen.

Collected by G. H. H. Tate on the Tipuani-Ancona-Sorata trail, alt. 13,000 ft., April 30, 1926 (No. 783).

SOLANUM TENUISPINUM Rusby, sp. nov. Aculeatus setosum et glanduloso-pilosum; aculei flavescentes elongati graciles acutissimi infra medium glanduloso-pubescentes; setae albiae graciles; petioli elongati; laminae late ovatae obtusae vel subacutae, dentibus magnis vel lobis utroque latere 2 vel 3, basi truncata vel subcordata; calyx setosus.

Branches, petioles, peduncles, and pedicels spiny, bristly and glandular-hairy; spines yellowish or light-brown, elongated, slender and very pungent, mostly divaricate, mostly a little compressed laterally at the base, and bearing, especially below the middle, short-glandular hairs, which are also borne on the stem and elsewhere; bristles whitish, slender; branches slender, very flexuous, green, irregularly angled; petioles to 8 cm. long, widely spreading, green-sulcate or angular; blades to 14 cm. long and nearly as wide, ovate, the blade somewhat oblique and truncate or subcordate, obtuse or acutish, with 2 or 3 large triangular teeth or lobes on each side, which are obtuse or acutish, the sinuses obtuse or rounded, the margin ciliate, very thin, deep-green above, bright-green beneath, the veins on both surfaces sparingly spiny, both surfaces more or less bristly and minutely and sparsely stellate-hairy among the bristles, the venation slender, prominent beneath, the secondaries 5 or 6 on each side, the finer venation coarsely reticulate; cymes umbelliform, few-fruited, the peduncle shorter than the pedicels, opposite and below the petiole, all the stems long-hispid and glandular, the pedicels regularly thickened upward; calyx bristly, parted nearly to the base, the lobes about 5 mm. long, narrowly lanceolate, acuminate and acute, subcarinate; fruit spherical, glabrous, light-brown, 1 cm. in diameter.

Collected by G. H. H. Tate, on the Ladew Expedition, at Nequejahuira, Bolivia, alt. 8000 ft., May 15 to 24, 1926 (No. 662). The species is near *S. atropurpureum* Schrenk.

BARTSIA ALTISSIMA Rusby, sp. nov. Albido-hispida; caulis

altus crassus sed debilis rubellus, ramis numerosis brevibus; folia amplectentia divaricata oblongo-lanceolata obtusa crassa crenato-dentata, ad basin latissima; flores in axillis superioribus sessiles; calycis tubus late campanulatus lobis triangulari-ovatis obtusis.

Hispid with short, stout, white, glistening hairs, many of which are branched at the base, or 2 or 3 from the same base; stem (of my specimen) nearly 7 dm. long, stout, but weak, reddish, strongly sulcate and obtusely angular, the branches numerous, short; leaves sessile and clasping, divaricate or somewhat deflexed, to 2 cm. long, broadest at the base, which is sometimes nearly half the length, lance-oblong, obtuse, gray-green, densely hispid, thickish, crenate-dentate with short obtuse teeth and acute sinuses, the midrib and secondaries very strong and keel-like on the lower surface, the secondaries 4 or 5 on each side, strongly ascending; flowers few, solitary and sessile in the upper axils, unexpanded in my specimen, the calyx broadly campanulate, the tube 4 mm. long and broad, the lobes triangular-ovate, obtuse, the longer about 2 mm. long; dissection material wanting.

Collected by G. H. H. Tate, on the Ladew Expedition, at Pongo, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 222). The species is very near *B. mutica* Benth. and *B. hispida* Benth., but is much more hispid than either and the hairs are different.

BARTSIA GUGGENHEIMIANA Rusby, sp. nov. Cinereo-hispidula; caules caespitosi ex caudice crasso foliosissimi; folia sessilia valde revoluta oblonga obtusa leviter crenata, basi angustata; pedicelli brevissimi graciles; calycis tubus cupulatus, dentibus rotundatis carnosio-incrassatis; corolla recta pubescens, tubo gracili.

Minutely grayish-hispidulose; stems caespitose, branching from a short and stout caudex, the branches 3 or 4 cm. long, stout, ascending, very densely leafy; leaves sessile, 5 or 6 mm. long, about 2 mm. wide when flattened out, but revolute and appearing narrower, oblong, obtuse with a narrowed base, the margin revolute, shallowly crenate, deep-green; pedicels very short, slender; calyx-tube cupulate, 4 mm. long, 2.5 mm. wide, the 2 longer lobes 1 mm. long and broad, the 2 smaller ones about two-thirds as large, all rounded, of a deeper green than the tube, fleshy-thickened; corolla straight, pink (?), pubescent, the tube slender, 4 mm. long, the limb slightly shorter, its longer lip more than twice the length of the shorter and several times larger; stamens at length slightly exerted, the summit recurved, the anthers broadly oval, the thecae mucronate at the base; style filiform, about twice the length of the calyx, sigmoid-curved, the stigma oval, obtuse, somewhat ob-

lique; capsule (immature) broadly ovoid, with a rounded summit.

Collected on the Ladew Expedition by G. H. H. Tate at Alasca Mine, Pongo, Bolivia, alt. 13,500 ft., March 1 to 4, 1926 (No. 64).

CALCEOLARIA CRYPTANTHA Rusby, sp. nov. Ubique tomentosa; rami graciles recurvi; petioli breves graciles; laminae ovatae acutae basi truncatae crenato-dentatae dentibus mucronulatis, supra puberulae, subtus cinereo-tomentellae; calyx latus sepalibus fere distinctis et aequalibus subtrinervis; corolla tomentella labio parviore poculiforme.

Habit unknown, apparently herbaceous and erect, with slender recurved branches; shortly tomentose throughout; branches strongly, irregularly, and obtusely angled; petiole to 5 mm. long, slender; blades to 3 by 2 cm., ovate with a truncate or lightly cordate base, acute, crenate-dentate with acute or mucronulate teeth, thin, deep-green and puberulent above, gray-tomentellous beneath, with the slender venation prominent, lightly falcate-ascending; inflorescence somewhat crowded at the ends of the short branchlets, the pedicels slender, at length 1.5 to 2 cm. long; calyx nearly 2 cm. broad, the sepals nearly distinct, broadly oval, mucronate, veiny, sub-trinerved; corolla yellow, tomentellous, the larger lip 13 mm. long and broad, nearly circular (as pressed), the claw very short, the smaller lip 3 mm. long and 4 mm. broad, cup-shaped, the stamens partially concealed in it; anthers 3.5 mm. broad, the thecae short and broad, divaricate from a broad base, confluent; style stout, equaling the anthers.

Collected on the Ladew Expedition by G. H. H. Tate at the top of the pass Tipuani to Sorata, alt. 14,000 ft., April 30, 1926 (No. 819).

CALCEOLARIA LECHIOIDES Rusby, sp. nov. Ubique cinereo-tomentello; caules lignosi rubelli ramosissimi, ramis adscendentibus foliosis; petioli breves crassi; laminae crassiusculae ovatae obtusae crenato-dentatae basi rotundatae; pedicelli brevissimi; calyx 1 cm. latus lobis late ovatis obtusis quam tubo duplo longioribus.

Gray-tomentellous throughout; stems woody, erect or ascending, reddish, much-branched, the branches short, ascending, very leafy; petioles nearly 1 mm. long, rather stout, the blades to 6 or 7 mm. long, 3 mm. wide, ovate, with a rounded base and obtusish summit, strongly crenate-dentate, with 4 or 5 teeth on each side, thickish, the venation impressed on the upper surface, stout and prominent underneath, the upper surface gray, the lower somewhat ferruginous; flowers racemose at the summit, the pedicels very short; calyx 1 cm. broad, divided two-thirds to the base,

the lobes broadly ovate, obtusish, thick, one distinctly broader than the others; corolla tomentose, yellow, 12 mm. long, 1 cm. broad, unopened in my flower; dissection material wanting.

Collected on the Ladew Expedition by G. H. H. Tate at Pongo, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 220).

CALCEOLARIA RIBESIAEFOLIA Rusby, sp. nov. Albido-pubescent; rami angulati et sulcati valde adscendentes; petioli suberecti; laminae triangulari-ovatae acutae paullo trilobatae grosse dentatae, basi subcordatae; pedicelli filiformes; sepala fere aequalia fere 1 cm. longa, ovata, acuta, quam corolla dimidio brevior.

Pubescent, with short white divergent hairs, the upper leaf-surfaces strigillose; stems and branches erect or strongly ascending, strongly angled and sulcate, my specimen 8 dm. high; leaves opposite, the petioles nearly erect, slender, to 5 cm. long, slightly dilated at the base, channeled above; blades 6 or 7 cm. long and broad, triangular-ovate, with a broadly truncate or subcordate base and an acute summit, sub-3-lobed, coarsely and unequally dentate with triangular acute teeth and acute or obtuse sinuses, very thin, the upper surface deep-green and rather sparsely short-strigose, the hairs stout, white, and glistening, the lower surface pale-green, grayish-pubescent, 5- to 7-nerved from the base or near it, the venation weak and not conspicuous; flowers few, loosely corymbose at the summit, the pedicels filiform; sepals sub-equal, the largest nearly 1 cm. long, broadly ovate, acute, densely pubescent; large lip of corolla 2 cm. long, the claw 3 mm., the sac 1 cm. broad; smaller lip of corolla 5 mm. long and broad; anther cells oval, turgid, 2 mm. long, 1.5 mm. wide, contiguous, nearly horizontal, confluent.

Collected on the Ladew Expedition by G. H. H. Tate at Pongo, Bolivia, alt. 12,000 ft., February 17 to March 1, 1926 (No. 219).

ARCYTHOPHYLLUM NODOSUM Rusby, sp. nov. Subglabrum; caules crassi; rami numerosi erecti graciles, nodis incrassatis et a foliis delapsis alte foveolatis; stipulae scariosae adpressae triangulares apice 2-3-setosae; folia demum recurva acuta breviaristata ex basi rotundata lanceolata.

Nearly glabrous; stems stout, erect, much-branched, the branches erect, slender, swollen at the nodes, which are deeply pitted where the leaves have disarticulated, the branchlets light-brown, sharply angled and clothed with the stipules; stipules scarious, strongly appressed, distinct or nearly so, triangular, 2 to 2.5 mm. long and mostly a little broader, bearing 2 or 3 slender terminal setae about of

their own length; leaves sessile, densely crowded, spreading and at length recurved, deep-green and shining above, apparently evergreen, at length turning brownish before falling, to 9 by 3 mm., lanceolate with a rounded base and an acute short-aristate summit, the middle portion much thickened, the margin somewhat thickened and deep-green against the yellowish lower surface; flowers few in the upper axils, subsessile, the calyx 5 mm. long, parted nearly to the base, the calyx-lobes closely resembling the leaves; corolla-tube 7 or 8 mm. long, 1.5 mm. wide, the lobes 3 mm. long, broadly ovate, acute, the corolla somewhat coriaceous; stamens attached near the summit of the tube, the filament slender, the anther 1 mm. long, oblong, slightly exserted; ovary very small, the style very short.

Collected by G. H. H. Tate at Cocopunco, Bolivia, alt. 10,000 ft., March 24 to 29, 1926 (No. 367). The species is very near to *A. flavescens*, but is well characterized by its swollen pitted nodes and its stipules, as well as by the crowded foliage and the leaf-characters.

EVEA RADIATA Rusby, sp. nov. Glabra; ramuli graciles nigrescentes, nodis incrassatis persistentes imbricatas truncatas gerentibus; petioli graciles; laminae oblongae vel oblanceolatae, basi subacutae, apice breviter acuminatae et acutae; cyma terminalis, pedunculo gracili nigrescente, ramuli cymae bracteis 4 parvis ovatis acutis subtenti.

Glabrous; branchlets slender, blackish, the internodes short, the nodes swollen and bearing the persistent stipules, which are interpetiolar, distinct but mostly imbricate at the base, 4 mm. long and broader, thick, truncate and sometimes bearing one or more short awns; petioles about 1 cm. long, slender, somewhat dilated at the base; blades to 15 by 6 cm., oblong or oblanceolate with an acutish base and an abruptly short-acuminate or mucronate acute summit, rather thin but coriaceous, the slender venation lightly prominent beneath, the midrib narrowly margined on the lower side, the secondaries very numerous, the alternate ones smaller, divaricate and the outer portions falcate to meet in a strictly marginal line, loosely connected by the tertiaries; cyme terminal, long and slenderly peduncled, the peduncle blackish, angled, the branches subtended by four small ovate acute bracts, the branches (4 in my specimen) about a third as long as the peduncle, slender, spreading, each terminating in a small head of 2 to several flowers, bracted like the cyme; fruits sessile or subsessile, about 1 cm. long and nearly as broad, ovoid, blackish, the persistent calyx-limb light-colored, 2 or 3 mm. long and about as broad, truncate or obscurely toothed, the summit a little broader; flowers not seen.

Collected by G. H. H. Tate at Ticunhuaya, Bolivia, alt.

5000 ft., April 20 to 24, 1926 (No. 1103). The foliage is closely similar to that of E. pectinata, but is thinner, and the species is well distinguished by its long peduncle and branches of the cyme.

GALIUM CHAROIDES Rusby, sp. nov. Ubique scabrum pilis conicis, verisimiliter annuum; caules graciles adscendentes ex basi ramosi 4-angulati vel anguste alati foliosi; folia 8 in quoque verticillo sessilia inaequalia linearia acute albidomucronata, margine dense scabra; flores parvi axillares solitarii; fructus hispidus.

Scabrous throughout, with short, conical, divaricate or ascending trichomes; apparently annual, the stems slender, to 30 cm. tall, much branched at the base, ascending, 4-angled or very narrowly winged, very leafy; verticils mostly 8-leaved, the leaves sessile, very unequal, the longest to 15 mm. long, spreading or often recurved, linear and the upper ones somewhat broader, acutely mucronate with a white point, obscurely 3-nerved, the margins densely scabrous with the white trichomes above described; flowers few, very small and solitary in the axils, the fruiting pedicels at length to 1 cm. long; fruit 1 mm. long and nearly 2 mm. broad, emarginate at the base and summit, the carpels nearly rotund, hispid, the hairs more slender than the others on the plant.

Collected by G. H. H. Tate, on the Ladew Expedition (No. 234), at Pongo, Bolivia, alt. 12,000 ft. The species is near G. pseudoaparine Griseb.

(a) A limited number of reprints of this article are available, and will be sent postpaid on receipt of fifty cents each. To those ordering copies of my "Three Hundred Species of South American Plants", at \$2.50, the present contribution will be sent without charge.

TAXONOMIC NOTES ON AMERICAN PHANEROGAMS -- I

Lyman B. Smith

This series is begun in order to record such notes as are necessitated by routine determinative work. Unless otherwise stated all material cited is deposited in the Gray Herbarium of Harvard University.

Although many authors have regarded Pleurostachys as a synonym of Rynchospora, very few of the species have ever been transferred. The following species appear to be valid and to merit transfer to Rynchospora:

RYNCHOSPORA FLUMINENSIS L. B. Smith, nom. nov. Nemochloa Beyrichii Nees in Mart. Fl. Bras. ii. pt. 1, 152 (1842), non Rynchospora Beyrichii Steud. Syn. Pl. Glumac. ii. 144 (1855). Pleurostachys Beyrichii Steud. Syn. Pl. Glumac. ii. 139 (1855). P. panicoides Pfeiff. in Bot. Archiv. ix. 240 (1925).

RYNCHOSPORA FOLIOSA (Kunth) L. B. Smith, comb. nov. Pleurostachys foliosa Kunth, Enum. Pl. ii. 284 (1837).

RYNCHOSPORA GAUDICHAUDII (Brongn.) L. B. Smith, comb. nov. Pleurostachys Gaudichaudii Brongn. Voy. Coquille, 174 (1834). Nemochloa Gaudichaudii Nees in Mart. Fl. Bras. ii. pt. 1, 150 (1842).

RYNCHOSPORA GRAMINIFOLIA (Brongn.) L. B. Smith, comb. nov. Pleurostachys graminifolia Brongn. Voy. Coquille, 175 (1834).

RYNCHOSPORA MARTIANA (Nees) L. B. Smith, comb. nov. Nemochloa Martiana Nees in Mart. Fl. Bras. ii. pt. 1, 150 (1842). Pleurostachys Martiana Steud. Syn. Pl. Glumac. ii. 139 (1855).

RYNCHOSPORA MILLEGRANA (Nees) Schrad. ex Griseb. Fl. Brit. W. Ind. 575 (1864). Nemochloa millegrana Nees in Mart. Fl. Bras. ii. pt. 1, 149 (1842). Pleurostachys millegrana Steud. Syn. Pl. Glumac. ii. 139 (1855).

RYNCHOSPORA ORBIGNIANA (Brongn.) L. B. Smith, comb. nov. Pleurostachys Orbigniana Brongn. Voy. Coquille, 175 (1834). P. macrantha Kunth, Enum. Pl. ii. 286 (1837). Nemochloa Orbigniana Nees in Linnaea, ix. 299 (1834). Nemochloa macrantha Nees in Mart. Fl. Bras. ii. pt. 1, 151 (1842).

RYNCHOSPORA PANICOIDES Schrad. ex Nees in Mart. Fl. Bras. ii. pt. 1, 154 (1842), in synonymy. Pleurostachys stricta Kunth, Enum. Pl. ii. 286 (1837), non Rynchospora stricta Boeckl. in Linnaea, xxxvii. 603 (1873). Nemochloa stricta Nees in Hooker's Journ. Bot. ii. 398 (1840). The name panicoides has not been used for any other species of

Rynchospora, so it may be revived for this one although published in synonymy.

RYNCHOSPORA PUBERULA (Boeckl.) L. B. Smith, comb. nov. Pleurostachys puberula Boeckl. in *Flora*, lxiii. 453 (1880).

RYNCHOSPORA SCALARIS L. B. Smith, nom. nov. Pleurostachys Urvillei Brongn. Voy. Coquille, 173, t. 31 (1834), non Rynchospora Urvillei Steud. Syn. Pl. Glumac. ii. 149 (1855). Nemochloa Urvillei Nees in Mart. Fl. Bras. ii. pt. 1, 150 (1842).

RYNCHOSPORA SPARSIFLORA (Kunth) L. B. Smith, comb. nov. Pleurostachys sparsiflora Kunth, Enum. Pl. ii. 286 (1837). Nemochloa sparsiflora Nees in Mart. Fl. Bras. ii. pt. 1, 151 (1842).

RYNCHOSPORA TENUIFLORA (Brongn.) L. B. Smith, comb. nov. Pleurostachys tenuiflora Brongn. Voy. Coquille, 175 (1834). Nemochloa tenuiflora Nees in Linnaea, ix. 295 (1834). N. turbinata Nees in Meyen, Reise, i. 112 (1843), in synonymy. Pleurostachys elegans Kunth, Enum. Pl. ii. 285 (1837). Nemochloa elegans Nees in Mart. Fl. Bras. ii. pt. 1, 149 (1842). Pleurostachys Luetzelburgiana Pfeiff. in Fedde, Rep. Spec. Nov. xix. 294 (1924). P. latifolia Pfeiff. ibid. 295.

Nemochloa turbinata was published in synonymy to begin with, and later authors in separating it have given no really distinctive characters to justify such action. The inflorescence is much denser than in mature Rynchospora tenuiflora, but that is only because the type consists of very young material.

Pleurostachys Luetzelburgiana and P. latifolia were based on minor distinctions which break down on comparison with ample material of Rynchospora tenuiflora.

APHELANDRA PRISMATICA (Vell.) Hiern in Kjoeb. Vidensk. Meddel. 78 (1877). Ruellia prismatica Vell. Fl. Flum. 267 (1825), Icones, vi. t. 98 (1827). R. quadrangularis Vell. ibid. 267, t. 97. Ruellia quadrangularis has been considered a synonym of Aphelandra sciophila Mart., yet the latter has distinctly dentate floral bracts while Vellozo's plate of the former shows the bracts entire. R. quadrangularis and R. prismatica are simply young and mature stages of the same species. In a single collection from Alto da Serra in the state of São Paulo, Brazil (L. B. Smith 1934), I have specimens matching each plate perfectly.

RUELLIA SOLITARIA Vell. Fl. Flum. 266 (1825), Icones, vi. t. 95 (1827). Dipteracanthus Schauerianus Nees in Linnaea, xvi. 290 (1842). Ruellia Schaueriana Lindau in Engl. & Prantl, Nat. Pflanzenf. iv. Abt. 3b, 310 (1895). That there can be little doubt of the identity of Vellozo's species, was found in determining A. C. Brade 11015 and L. B. Smith 1365, both from the city of Rio de Janeiro. Consequently there is no point in maintaining Lindau's much later name for the species.

A CASE OF "POLLINIA" (a)

Charles Clinton Smith

Recently while studying the pollen of Sarcolaena multiflora Dup. Ehs., a member of the Chlaenaceae, the author noticed that the grains were large and were deeply sculptured in a most curious manner. Between the sculpturings could be seen the outlines of a number of spherical objects.

Upon being shown a specimen, Dr. Paul B. Sears suggested that it might be a pollinium of sixteen grains, all enclosed within the thick and sculptured wall. Further study proved this to be the case.

A search into the literature for information or references concerning the pollen of this family revealed the notation from Engler and Prantl that the pollen grains are comparatively large, that their form is, in all species examined, uniform and spherical, and that they have six deep furrows crossing their surface. Tetrads are arranged according to the angles of furrows (b).

The only cases of pollinia recorded in the literature were those of the Orchidaceae, Asclepiadaceae, Mimosae, and Acaciae. In these cases of pollinia there are usually 8, 16, 64, or hundreds of pollen grains which are united by a waxy substance. There is no mention of a special covering around the mass or any consistent numbers of cells concerned. In some cases the contents of the whole locule of the anther has been united.

A condition similar to the one found by the writer is the so-called "tetrad", a condition in which 4 cells are within a common wall or are united with various degrees of firmness. These have been reported by various workers in the following plant groups: many species of Orchidaceae, in the Ericaceae (Erica, Calluna, Menziesia, and Andromeda), in the Epacridaceae (Epacris and Leucopogon). Other genera are Arctostaphylos, Arbutus, Rhododendron, Ledum, Vaccinium, Juncus, Jacquinia, Luzula, Anona, Drimys, Jussiaea, Periploca, Fourcroya, and Typha.

Upon request, Dr. H. Humbert of Paris sent eight additional species of the Chlaenaceae, including six genera. An examination of this material revealed that a similar condition existed in all of these species. In four species the pollen grains are in quartets (see figs. 1, 2, 5, and 8), the degree of union of the members of the quartet varying from a condition where a heavy sculptured wall encloses the four cells to a condition where the four cells are only

TABLE I.

Data concerning the pollen of the members of the Chlaenaceae examined in this study.

Pollen of:	Diameter in μ	Number of cells	Description
<i>Eremolaena</i> <i>rotundifolia</i>	90	4	Common wall thick, not sculptured in regular fashion.
<i>Eremolaena</i> <i>Humboldtiana</i>	117	4	Common wall with at least 4 wide deep furrows, wall papillate along margin.
<i>Leptolaena</i> <i>multiflora</i>	73	16	Tetrad separated by heavy partition, common wall sculptured.
<i>Rhodolaena</i> <i>Bakeriana</i>	109.5	16	Tetrads very distinct, common wall very thin, not sculptured. Cells bulge walls out.
<i>Rhodolaena</i> <i>parviflora</i>	45	4	No outer wall, members of tetrads separated easily.
<i>Sarcolaena</i> <i>odonochlamys</i>	127.4	16	Outer wall heavy.
<i>Sarcolaena</i> <i>multiflora</i>	101	16	Like above, tetrads very distinct.
<i>Schizolaena</i> <i>cauliflora</i>	40	4	Rather easily separated into single grains
<i>Xerochlamys</i> <i>Bojeriana</i>	80	16	Common wall rather thick. Crystals in walls.
<i>Xylolaena</i> <i>Richardii</i>	135	16	Members of tetrads rather firmly united, may be surrounded by a common wall.

slightly coherent.

The remaining species have compound grains composed of 16 cells. The outer wall of these compound structures is quadrisected by six deep furrows (fig. 11a). Each of the four portions of the wall thus formed covers a quartet of cells.

Such a condition could have resulted if the members of the tetrads formed during sporogenesis had undergone two more divisions and all the cells thus formed had remained within the spore-mother cell wall. The descendants of members of the original tetrad would form quartets enclosed within the wall which probably formed about each member of the original tetrad before the next divisions occurred. Thus the sixteen cells are grouped into four quartets, each quartet distinct from the other three quartets.

The members of each quartet are arranged so that three cells are against the outer wall and one is in the center (fig. 11b). The three cells against the outer wall thus form in general outline a triangle. The deep furrows mentioned above pass between adjacent quartets (fig. 11a) and the areas between the furrows are also triangular. Each triangular portion of the outer wall fits over a quartet like a cap (fig. 11b).

The compound grain might be said to be quadrisepate, since the wall of the cells which divided to form the members of each quartet is discrete and definitely separates the quartets from one another.

The outer wall which covers the four quartets probably represents the modified spore-mother cell wall.

The width of the furrows varies with the water content of the structure. When the cells are turgid, the furrows are wide, when dried, narrow.

The word pollinia undoubtedly was not coined to designate as complex or highly organized structures as have just been described. Kerner and Oliver, in their Natural History of Plants, give the following definition of a pollinium, "The resultant mass of pollen cells formed when the pollen of one Archesporium remain united into a tissue". Webster's New International Dictionary defines it simply as, "A coherent mass of pollen grains".

A new term to more aptly describe these structures seems desirable. The term, pollen tetraquartet, although a little awkward, describes the true condition well, as will be seen from the description above (c).

Table I gives the data concerning the members of the family examined in this study.

The ancestral type of this family apparently arose on the island of Madagascar and for some reason remained in a small area on the island. Tracing the evolution of the present types on the basis of pollen morphology may be done, although some steps in the process may be missing. If we ar-

range the species according to complexity we arrive at this series:

Rhodolaena parviflora, simple quartet, easily separated.

Schizolaena cauliflora, simple quartet, rather easily separated.

Eremolaena rotundifolia, single quartet, surrounded by a common unsculptured wall.

Eremolaena Humblotiana, single quartet, surrounded by a thick sculptured wall.

Xylolaena Richardii, four quartets, common wall unmodified.

Leptolaena multiflora, Rhodolaena Bakeriana, Sarcolaena codonochlamys, Sarcolaena multiflora, and Xerochlamys Bojeriana would then culminate the series as the most complex on the basis of pollen morphology.



Fig. 12

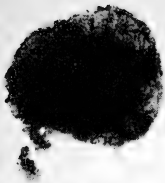


Fig. 1

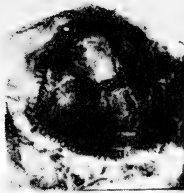


Fig. 2

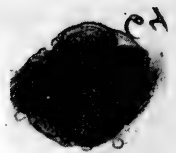


Fig. 3

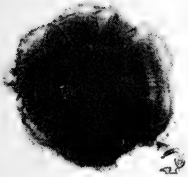


Fig. 4

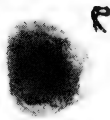


Fig. 5

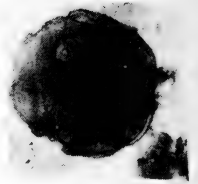


Fig. 6



Fig. 7

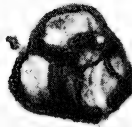


Fig. 8

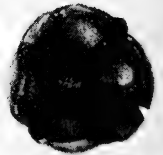


Fig. 9

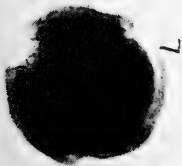


Fig. 10



Fig. 11

Explanation of Figures

Figures 1 to 10 inclusive, photomicrographs by the author, made with Spencer Microscope Model 44. Figure 11 photographed by Theodore Kibby.

Fig. 1. Pollen quartet of Eremolaena rotundifolia P. Danduy, X 180.

Fig. 2. Pollen quartet of Eremolaena Humblotiana H. Bn., X 115.

Fig. 3. Pollen tetraquartet of Leptolaena multiflora Du Petit Thouars, X 160.

Fig. 4. Pollen tetraquartet of Rhodolaena Bakeriana H. Bn., X 145.

Fig. 5. Pollen quartet of Rhodolaena parviflora F. Gerard, X 215.

Fig. 6. Pollen tetraquartet of Sarcolaena codonochlamys Baker, X 140.

Fig. 7. Pollen tetraquartet of Sarcolaena multiflora Dup. Ehs., X 185.

Fig. 8. Pollen quartet of Schizolaena cauliflora Dup. Ehs., X 290.

Fig. 9. Pollen tetraquartet of Xerochlamys Bojeriana H. Bn., X 180.

Fig. 10. Pollen tetraquartet of Xylolaena Richardii H. Bn., X 105.

Fig. 11. Clay model of pollen tetraquartet of Rhodolaena Bakeriana H. Bn.; a. one cell; b. rim of cap; c. bulge in cap due to cell beneath.

Fig. 12. Pollen tetraquartet of Sarcolaena multiflora Dup. Ehs., X 780.

(a) Contribution from the Botanical Laboratory of the University of Oklahoma, No. 29.

(b) Die natürlichen Pflanzenfamilien, III Teil, 6 Abteilung.

(c) Sharp (Lester W., An introduction to cytology. New York. Ed. 3. 1934. Page 250), it seems to us wisely, has advocated the use of the term quartet to designate four cells formed by division of a mother cell and limited the term tetrad to the univalent groups of chromosomes present previous to the formation of separating cells.

THE MAHONIAS OF THE PACIFIC STATES

LeRoy Abrams

The late Professor Piper has given a scholarly account (1) of the taxonomic history of Mahonia aquifolium and M. repens, in which he reports the results of critical studies of the peculiar differences in the epidermis of the lower surfaces of the leaflets. He found that these epidermal characters set off M. aquifolium and M. pinnata from the rest of the species. In these two species the epidermal cells of the lower surface of the leaflets are rounded on the back, the enlarged rounded portion conforming in outline with the cell and not evident as distinct papillae. Whereas in M. repens, M. pumila, and related species the lower surface is beset with minute cylindrical papillae. Accompanying this papillate character is the grayish color of the lower surface.

By using this microscopical structure of the epidermis as an additional taxonomic character it is possible to delimit the species of Mahonia more clearly, and the present paper is an attempt to reevaluate and realign the species of the Pacific States, which is one of the chief geographic centers of the genus.

Bud-scales glumaceous, persistent, 15-40 mm. long; filaments unappendaged. 1. M. nervosa.

Bud-scales deciduous, 2-5 mm. long; filaments with a pair of recurved teeth near the apex.

Racemes densely many-flowered; floral bracts triangular-ovate, obtuse or acute; berry oblong-ovoid, blue-black, fleshy.

Epidermis of the lower surface of the leaflets not papillate; upper surface bright green and shining.

Leaflets ovate, mostly obtuse, the lowest pair borne close to the base. 2. M. pinnata.

Leaflets ovate-lanceolate, the lowest pair remote from the base. 3. M. aquifolium.

Epidermis of the lower surface of the leaflets with minute papillae.

Leaflets bright-green and shining above.

Teeth 7-11 on each margin of the leaflets, tipped with slender spines; lower surface of leaflets gray-green. 4. M. piperiana.

Teeth 12-16 on each margin, merely bristle-tipped; lower surface not gray. 5. M. sonnei.

Leaflets dull or gray-green above, grayish beneath.

Teeth small, bristle-tipped, usually 12 or more on a side.

6. M. repens.

Teeth large, tipped with stout spines, usually 5-9 on each margin.

Plants low, 2-5 dm. high; teeth not as long as the body portion of the leaflet.

7. M. pumila.

Plants 1-2 m. high; leaves pale gray-green on both surfaces, strongly undulate and rigid, the teeth about as long as the body portion of the leaflet.

8. M. dictyota.

Racemes loosely 5-7-flowered; floral bracts lanceolate-acuminate; leaflets glaucescent on both surfaces; berries globose, becoming dry.

Leaflets with 2-3 prominent spiny teeth on each margin.

9. M. fremontii.

Leaflets narrow, long-acuminate, with 8 or more bristle-like teeth on each margin.

10. M. nevinii.

1. MAHONIA NERVOSA (Pursh) Nutt. Gen. Pl. 1: 212. 1818.

Berberis nervosa Pursh, Fl. Sept. 219, pl. 5. 1814.

Mahonia glumosa DC. Syst. Veg. 2: 21. 1821.

Odostemon nervosus Rydb., Bull. Torrey Club 33: 141. 1906.

Stems simple, 2-6 dm. high, bearing the leaves in a terminal tuft, the scales of the terminal bud glumaceous, persistent, 2-4 cm. long. Leaves 25-40 cm. long; leaflets 7-21, ovate to ovate-lanceolate, acute, 3-5 cm. long, spinulose-serrate, glossy-green, somewhat palmately nerved; racemes 7-20 cm. long, erect; pedicels 5-8 mm. long; berries glaucous-blue, 8-10 mm. in diameter.

Coniferous forests, Humid Transition Zone; Vancouver Island and British Columbia to Monterey, California. Type locality: The Cascades of the Columbia River.

2. MAHONIA PINNATA (Lag.) Fedde in Engler, Jahrb. 31: 86. 1901.

Berberis pinnata Lag. Elench. Hort. Madr. 6. 1803 (nomen nudum); l.c. 14. 1816.

Mahonia fascicularis DC. Syst. Veg. 2: 19. 1821.

Odostemon fascicularis Abrams in Bull. N. Y. Bot. Gard. 6: 360. 1910.

Stems erect, branching, 3-15 dm. high; leaflets 5-17, commonly 7-9, crowded on the rachis, the lowest pair near the base, glossy green above, scarcely paler beneath, rather thin, spinulose-dentate, the teeth usually 12 or more on each margin; racemes dense, fascicled, 3-5 cm. long.

Wooded slopes or thickets, mainly Upper Sonoran Zone;

California Coast Ranges from Humboldt to Los Angeles Counties. Type locality: Monterey, California.

3. MAHONIA AQUIFOLIUM (Pursh) Nutt. Gen. Pl. 1: 212. 1818.

Berberis aquifolium Pursh, Fl. Sept. 1: 219. 1814.

Odostemon aquifolium Rydb., Bull. Torrey Club 33: 141. 1906.

Odostemon nutkanus (DC.) Rydb. l.c.

Stems erect, 8-20 dm. high, or sometimes dwarfed; leaflets 5-9, the lowest pair distant from the base of the rachis, ovate-lanceolate, 3-7.5 cm. long, with usually 10 or more small spinulose teeth on each margin, bright glossy green above, light green beneath; racemes fascicled, 4-8 cm. long; berries blue and glaucous, on pedicels 10-15 mm. long.

Coniferous woods, Humid Transition Zone; southwestern British Columbia to the Calipooia Mountains, Oregon, also in northwestern Idaho. Type locality: The Cascades of the Columbia River.

4. MAHONIA PIPERIANA Abrams, sp. nov.

Frutex erectus 2-5 dm. altus; foliolis 5-9 frequenter 7, jugo inferiore a petioli basi distante ovato 2.5-6 cm. longis, dentibus 7-9 spinosis.

Stems erect, 2-5 dm. high; leaflets 5-9, commonly 7, the lower pair usually distant from the base of the rachis, ovate, 2.5-6 cm. long, spinose-dentate, with 7-9 teeth on each margin; upper surface glossy green and rather finely reticulate, the lower surface gray-green and papillate; racemes 3-7 cm. long, densely or rather loosely fascicled; berry blue-black, ellipsoid-ovoid.

Usually on thinly wooded slopes, Arid Transition Zone; Jackson and Josephine Counties, Oregon, to Mendocino and northern Lake County, California. Type locality: Along the Pacific Highway, near the Siskiyou summit, Jackson County, Oregon, Abrams and Benson 10176, March 9, 1924. A fruiting specimen was collected in the same vicinity in September, 1927 (Abrams 12136).

Most California botanists have been referring these plants to M. aquifolium, but Piper clearly showed that they were not closely related to that species. He tentatively placed them with the then little understood M. dictyota, a species we now know to be quite different. M. piperiana is fairly common over the range indicated, and is represented in the Dudley Herbarium by thirty-five different collections.

5. MAHONIA SONNEI Abrams, sp. nov.

Frutex 3-5 dm. altus; foliolis 5, jugo inferiore a petioli basi distante ovato-lanceolatis; dentibus utrinque 13-16 spinulosis; racemis congestis paucis elongatis.

Low shrub, 2-5 dm. high; leaflets 5, ovate-lanceolate, 4-8 cm. long, glossy green above, pale beneath but not grayish or very obscurely so, the papillae being rather thinly scattered; racemes densely flowered, 4-7 cm. long; berries blue-black, about 6 mm. long.

The type was collected on rocky banks of the Truckee River, Nevada County, California, by C. F. Sonne no. 11, August 11, 1884, and April, 1885. It is sheet no. 95828 in the Dudley Herbarium.

This species has long been confused with M. aquifolium which it superficially resembles in the shape of the leaflets and in their shiny green appearance, but the small numerous teeth and the papillate lower surface clearly indicate that its closest affinities are with M. repens.

6. MAHONIA REPENS (Lindl.) G. Don, Gen. Hist. Pl. 1: 118. 1831.

Berberis repens Lindl. Bot. Reg. 14: pl. 1176. 1828.

Odostemon repens Cockerell in Daniels, Fl. Boulder Colo.

125. 1911.

Stems creeping and stoloniferous, 1-2 dm. high; leaflets 3-7, oval or rarely ovate, 3-9 cm. long, plane or nearly so, dull green above, grayish-green beneath and papillate with minute microscopic protuberances; teeth usually 12 or more on a side, small and merely bristle-tipped; racemes densely many-flowered; berry ellipsoid-globose, 7-8 mm. long.

Open pine forests, Arid Transition Zone; eastern British Columbia south along the eastern slopes of the Cascade Mountains to northeastern California, and east to Alberta, Nebraska, and New Mexico. Type locality: probably Montana.

7. MAHONIA PUMILA (Greene) Fedde in Engler, Bot. Jahrb. 31: 82. 1901.

Berberis pumila Greene, Pittonia 2: 161. 1891.

Odostemon pumilus Heller, Muhlenbergia 7: 139. 1912.

Stem erect, 2-4 dm. high, rarely higher, simple or branched; leaflets 5-9, broadly oblong-ovate, blunt at the apex, dull green and strongly reticulate-veined above, glaucous beneath, undulate and strongly spinose-dentate, the teeth 5-9 on each margin; racemes fascicled, many-flowered; berries blue-black, with a bloom, oblong-ovoid, about 6 mm. long.

Wooded slopes, Upper Sonoran and Arid Transition Zones; Rogue River, southern Oregon, south in the North Coast Ranges and the Sierra Nevada; also the Cuimamaca Mountains, California. Type locality: near Waldo, Oregon.

8. *MAHONIA DICTYOTA* (Jepson) Fedde in Engler, Bot. Jahrb. 31: 89. 1901.

Berberis dictyota Jepson, Bull. Torrey Club 18: 319. 1891.
Odostemon dictyota Cockerell, Bull. Am. Mus. Nat. Hist. 24: 91. 1901.

Berberis californica Jepson, Fl. Calif. 549. 1921.

Erect shrub, 5-20 dm. high, rather sparsely leafy; leaflets 5-7, broadly oblong to suborbicular in outline, strongly undulate and prominently spinose-toothed with 3-5 teeth on each margin, thick-coriaceous and prominently net-veined on both surfaces, pale green above and glaucous beneath; racemes fasciculate; berries very glaucous, about 5 mm. long.

Dry chaparral ridges, Upper Sonoran Zone; California from the dry interior foothills of the upper Sacramento Valley to San Diego County. Type locality: Marysville Buttes, California.

9. *MAHONIA FREMONTII* (Torr.) Fedde in Engler, Bot. Jahrb. 31: 89. 1901.

Berberis fremontii Torr. Bot. Mex. Bound. 30. 1859.
Odostemon fremontii Rydb., Bull. Torrey Club 33: 141. 1906.

Erect shrub, with rigid branches, 1-3 m. high; leaflets 3-7, commonly 5, rather narrowly ovate, 15-25 mm. long, coriaceous, pale gray-green on both surfaces, the spiny teeth prominent, usually 3 on each side; racemes terminating the numerous short stubby branchlets, usually 3-5-flowered; bracts acuminate; pedicels slender, 10-16 mm. long; berries becoming inflated and dry.

Dry mountain slopes of the desert regions, Upper Sonoran Zone; southern Nevada to southern Colorado south to Arizona, the deserts of southern California, and adjacent Lower California. Type locality: "On the tributaries of the Rio Virgen", southern Utah.

10. *MAHONIA NEVINII* (A. Gray) Fedde in Engler, Bot. Jahrb. 31: 102. 1901.

Berberis nevinii A. Gray, Syn. Fl. 1: 69. 1895.
Odostemon nevinii Abrams, Bull. N. Y. Bot. Gard. 6: 359. 1910.

Much branched shrub, 1-2 m. high; leaflets 3 or rarely 5, lanceolate, the lateral 2-3 cm. long, the terminal often

nearly twice as long, gray-green on both surfaces, spinulose-serrate, the teeth numerous, bristle-like; racemes terminating the numerous stubby branchlets, loosely 5-7-flowered; bracts acuminate; berries densely covered with bloom.

Dry sandy washes, Upper Sonoran Zone; a rare species, known only from the eastern end of San Fernando Valley, southern California.

(1) Piper, Charles V. The identification of Berberis aquifolium and Berberis repens. Contr. U. S. Nat. Herb. 20: 437-451, pl. 24-26. 1922.

STUDIES OF NEW AND NOTEWORTHY TROPICAL AMERICAN PLANTS — II

Harold N. Moldenke

AEGIPHILA BREVIFLORA (Rusby) Moldenke, comb. nov.

Pseudaegiphila breviflora Rusby, Mem. N. Y. Bot. Gard. 7: 341. 1927.

ALOYSIA LIGUSTRINA var. SCHULZII (Standl.) Moldenke, comb. nov. Lippia ligustrina var. Schulzii Standl., Field Mus. Publ. Bot. 4: 256. 1929.

ALOYSIA MACROSTACHYA (Torr.) Moldenke, comb. nov.

Lippia Wrightii var. macrostachya Torr. Bot. Mex. Bound. 127. 1859.

ALOYSIA PULCHRA (Briq.) Moldenke, comb. nov.

Lippia pulchra Briq., Arkiv Bot. 2, no. 10: 18. 1904.

ALOYSIA SCORODONIOIDES var. DETONSA (Briq.) Moldenke, comb. nov. Lippia scorodonioides var. detonsa Briq., Bull. Herb. Boiss. 4: 339. 1896.

ALOYSIA SCORODONIOIDES var. MATHEWSII (Briq.) Moldenke, comb. nov. Lippia scorodonioides var. Mathewsii Briq., Bull. Herb. Boiss. 4: 339. 1896.

ALOYSIA SPATHULATA (Hayek) Moldenke, comb. nov.

Lippia spathulata Hayek in Engl. Bot. Jahrb. 42: 165. 1908.

ALOYSIA VIRGATA var. LAXA (Chod.) Moldenke, comb. nov.

Lippia urticoides var. laxa Chod., Bull. Herb. Boiss., ser. 2, 2: 819. 1902.

ALSEIS MUTISII Moldenke, sp. nov. Frutex vel arbor; ramulis gracilibus plusminus tetragonis brunneis glabratiss; nodis annulatis; internodiis 1.5--1.7 cm. longis; foliis decussato-oppositis stipulatis; stipulis parvis caducis; petiolis gracilibus 5--12 mm. longis glabris; laminis firme membranaceis utrinque nitidis et prasinis, oblongis vel oblongo-ellipticis 5.5--10.3 cm. longis, 1.7--3.3 cm. latis, abrupte acutis vel subacuminatis integris, ad basin acutis, supra glabris, subtus juventute levissime breviterque furfuraceo-puberulentibus senectute subpuberulentibus vel glabris; costa gracili, subtus prominente; venis secundariis gracilibus frequentibus ubique ca. 10 brevibus adscendenti-

bus saepe vix arcuatis utrinque prominulentibus; reticulo venarum venularumque utrinque subconspicuo prominente; inflorescentiis paniculatis terminalibus; paniculo 15--22 cm. longo et 14--15 cm. lato, racemis spiciformibus ca. 9, pedunculo (2--2.2 cm. longo) et symmodiis (1.4--3.5 cm. longis) firmis brunneis dense breviterque puberulentibus; bracteis foliaceis caducis, 2 quamque jugam racemorum subtentibus, foliis consimilibus sed constanter deminuentibus; hypanthio ca. 1.5 mm. longo et 1 mm. lato puberulente; lobis calycis 5 usque ad summam hypanthii disjunctis, elliptico-lingulatis ca. 0.7 mm. longis et 0.5 mm. latis glabris, ad apicem rotundatis; tubo corollae ca. 1.8 mm. longo et constanter 1.3 mm. diametro, extra glabro, intus villosus, lobis 5 ca. 0.6 mm. longis et 1 mm. latis late ovatis ad apicem rotundatis; staminibus 5, ad basin tubae corollae insertis, corollam aequantibus; filamentis crassis conicis, ad basin complanatis, densissime longeque villosis, pilis sufflavis adscendentibus; pistillo longe exserto; stylo ca. 3.6 mm. longo glabro, ad apicem bifido, ramulis stigmatiferis divaricatis subrecurvatis ca. 0.6 mm. longis; placentis ab apice ovarii pendulis multiovuliferis.

The type of this species was collected by José Celestino Mutis (No. 2948), probably in the vicinity of Bogotá, Cundinamarca, Colombia, and is deposited in the United States National Herbarium (No. 1,561,457). The specimen was received by the United States National Museum from the Jardín Botánico in Madrid in 1932 and the number is an arbitrary one assigned by E. P. Killip. The inflorescences are composed mostly of 4 pairs of opposite racemes and one terminal one, the individual racemes being 4.5--11 cm. long, the longest being the terminal one and the lowermost pairs, each raceme about 1 cm. wide in anthesis. The species is related to *A. leiantha* Blake, from Venezuela, but differs in its much more slender twigs, its slender petioles, its smaller and firmer leaf-blades with fewer secondaries, its more paniculate inflorescences and shorter and more slender racemes, and its much smaller flowers.

AVICENNIA NITIDA var. *TRINITENSIS* Moldenke, var. nov.
Haec varietas a forma speciei typica recedit in omnibus partibus, praesertim laminis foliorum, glabris vel subglabris et plerumque nitidis.

The type of this variety was collected by R. L. Brooks at Caroni Swamp, Trinidad, May 29, 1932 (Trinidad & Tobago Botanical Garden no. 12,656) and is deposited in the herbarium of the New York Botanical Garden. Herb. Trin. & Tob. Bot. Gard. no. 12,651, collected at the same locality by R. C. Marshall on May 9, 1932, is the same variety, as is also Britton, Hazen, & Mendelson 541 from Patos Island, March 13, 1920. The complete absence of pubescence from the nitid

lower leaf-surfaces is most characteristic.

CASSELIA ILICIFOLIA Moldenke, sp. nov. Fruticulus; ramis gracilibus 4-angulatis et 4-costatis glabratiss, cortice griseo vel albido obtectis; ramulis et sarmentis gracillimis tetragonis brunneis vel brumneo-luteis dense breviterque pubescentibus vel puberulentibus; internodiis abbreviatis 0.8--3 cm. longis; foliis sessilibus oppositis vel ternatis; laminis ellipticis vel ovatis 7--15 mm. longis 3--14 mm. latis utrinque puberulentibus, margine dense irregulariterque spinosis, majoribus ad basin amplissimis et truncatis, minoribus in sarmentis perabbreviatis confertis perangustioribus et ad basin acutis; pedunculis axillaribus oppositis vel ternatis gracillimis 1.2--2 cm. longis dense puberulentibus vel breviter pubescentibus 2--4-floris (plerumque 2-floris), ad apicem jugam bracteolorum linearum dense puberulentum 2--6 mm. longorum gerentibus; calyce tubuloso 6--10 mm. longo 2.5--3 mm. diametro plusminus 5-costato dense puberulente vel breviter pubescente, margine 5-dentato, dentibus linearibus 1--2 mm. longis; corolla hypocrateriformi zygomorpha, tubo fere recto, limbo 5-lobato; staminibus 4 didynamis prope basin tubae corollae insertis, brevissimis; stylo gracili ca. 2.5 mm. longo glabro, ad apicem stigma peltatum oblique gerente; ovario ca. 1.3 mm. longo glabro 2-loculare, quoque loculo 1-ovulato.

The type of this species was collected by Frederico Schmaedke at La Diana, Ulapes, Rioja, Argentina, February 24, 1907 (T. Stuckert no. 17,013), and is deposited in the herbarium of the Conservatoire et Jardin Botaniques at Geneva. Stuckert nos. 4724; 4734; 17,014; and 22,502, from the same locality, represent the same species. *C. ilicifolia* may be distinguished at once from all other members of the genus by its spiny-margined leaf-blades.

CITHAREXYLUM LINEARIFOLIUM Moldenke, sp. nov. Frutex usque ad 3 m. altus; ramis et ramulis gracilibus stramineis glaberrimis laevisque, non lenticellatis; nodis non annulatis; internodiis 1--5.5 cm. longis; cicatricibus foliorum delapsorum in sterigmatibus sitis, sterigmatibus insignibus gracilibus adscendentibus 1--3.5 mm. longis glabris et in latere abaxiali projecturam longam rostelloidream gerentibus; foliis decussato-oppositis vel ternatis (vel interdum suboppositis vel subspiraliter dispersis); petiolis gracilibus 3--6 mm. longis glabris; laminis membranaceis utrinque atro-viridibus et pernitidis linearibus 4.5--16 cm. longis 3--6 mm. latis integris, ad apicem subulato-acuminatis, ad basin longe attenuatis, utrinque glaberrimis, ima basi jugam glandularum discoidearum nigrarum gerentibus; costa gracili utrinque prominulente; venis secundariis non dilucidis; reticulo venarum venu-

larumque utrinque plusminus prominulente, praesertim supra, plerumque subtus obscuro; racemis terminalibus et sarmenta brevia axillaria terminantibus, erectis vel nutantibus 5--10 cm. longis ca. 1.5 cm. latis densiuscule multifloris simplicibus; pedunculis gracillimis 5--9 mm. longis glabris; rhachide gracillimo glabro; pedicellis gracilibus usque ad 1 mm. longis glabris; bracteis et bracteolis nullis; prophyllis lineari-subulatis 1--2 mm. longis glabratiss; calyce tubuloso ca. 3.6 mm. longo et 2 mm. diametro glabrato, margine 5-dentato, sinibus 4 tenuissimis, sinu 1 perprofundo (ca. 0.7 mm. profundo); corolla hypocrateriformi alba glabra suaveolente, tubo cylindrico ca. 6.2 mm. longo, intus piloso, limbo 5-partito, lobis elliptico-lingulatis vel subspathulatis ca. 3.6 mm. longis et 2.3 mm. latis venosis, ad apicem rotundatis; staminibus 4 prope apicem tubae corollae insertis inclusis; filamentis filiformibus ca. 0.7 mm. longis; antheris oblongis ca. 1 mm. longis; pistillo incluso; stylo crassiusculo ca. 2.2 mm. longo levissime puberulente; stigmate breviter bifido, ramulis complanatis ca. 0.7 mm. longis et 0.5 mm. latis; ovario subgloboso ca. 1 mm. longo et lato glabrato 4-loculari (sed non perfecte, ut videtur 2-loculari); calyce fructifero indurato leviter cupuliformi ca. 3 mm. longo et 6.5 mm. diametro glabro, margine subprofunde 5-lobato, lobis rotundatis; fructibus oblongis usque ad 16 mm. longis et 9 mm. latis carnosiss nitidis glabris 2-lobatis.

The type of this remarkable species was collected by Edward Palmer in Paraguay during the exploration of the Rio La Plata and adjacent territory in the years 1853--1856, in charge of Capt. T. J. Page, and is deposited in the United States National Herbarium. It has been collected both in anthesis and in fruit in October and in March. The species is unmistakable because of its long linear leaves. Its sterigmata are also unique and its leaf-arrangement noteworthy.

PHYLA NODIFLORA var. CANESCENS (H.B.K.) Moldenke, stat. nov. Lippia canescens H.B.K. Nov. Gen. & Sp. Pl. 2: 263. 1817.

PHYLA NODIFLORA var. SERICEA (Kuntze) Moldenke, stat. nov. Lippia nodiflora var. normalis f. sericea Kuntze, Rev. Gen. Pl. 2: 508. 1891.

PINGUICULA PUMILA var. BUSWELLII Moldenke, var. nov. Haec varietas a forma speciei typica recedit corolla tota butyroideo- vel aureo-flava.

The type of this very rare variety of butterwort was collected by Harold N. Moldenke (No. 981a) in a moist sandy pineland along the old Tamiami Trail, Collier Co., Florida,

April 14, 1930, and is deposited in the herbarium of the New York Botanical Garden. The variety was first discovered by Mr. Walter M. Buswell, of Fort Myers, Fla., in May, 1914, in whose honor it is named. It is known from only two localities: (1) near what is known as the "Welsh Grove" on the east side of the Big Cypress Swamp, about 10 or 12 miles northwest of Deep Lake, in Collier County, and (2) about 1 1/2 miles south of Bonita Springs on the old Tamiami Trail, also in Collier County (about 1 mile over the Lee County line). These two localities are approximately opposite each other in an east-west line, one being on the east side and the other on the west side of the Big Cypress swamp. It was collected at the second locality (the type locality) by Miss Jeanette P. Standley on October 11, 1916, and specimens were distributed by her as No. 307 to the United States National Herbarium and the New York Botanical Garden. Those who have seen this plant growing have difficulty in believing that it is not a totally different species from P. pumila Michx. Dr. John Hendley Barnhart, however, is convinced that it is a mere color form of the latter widely distributed species of the southeastern United States and the West Indies, and it is so regarded by Small in his "Manual of the Southeastern Flora", page 1232 (1933). In the typical form of P. pumila, however, the corolla is white, pale violet, or pale rose, while in the variety which we are here describing the corolla is of a rich golden-yellow or butter-yellow throughout, even as it is in P. lutea Walt. In the opinion of the present writer this pretty yellow-flowered butterwort deserves at least varietal designation.

RECORDIA Moldenke, gen. nov. Frutices vel arbores. Folia opposita. Inflorescentia racemosa terminalis multiflora. Calyx tubuloso-campanulatus, in latere inferiore (abaxiali) fissus, 5-costatus, costis 3 superioribus in apiculationes brevissimas terminantibus, costis 2 inferioribus in apiculationes nullo modo vel perobsoleta terminantibus. Corolla hypocrateriformis zygomorpha non valde curvata, tubo obconico, lobis 5, 2 supremis (adaxialis) minimis, lateralibus 2 mediocriter, lobo infimo in magnitudine maximo. Stamina fertilia 4 didynama infra oram tubae corollae inserta, inferiora 2 maxima, stamen quintum ad staminodium filiforme reductum. Antherae sagittatae dorsifixae, thecis ad basin divergentibus. Stylus simplex terminalis, ad apicem lateraliter curvatus, arcu convexo complanato stigmatifero. Ovarium fusiforme, ad apicem in stylum abrupte attenuatum, 2-loculare, quoque loculo 1-ovulato.

RECORDIA BOLIVIANA Moldenke, sp. nov. Frutex vel arbor;

ramis et ramulis crassiusculis subteretibus griseis glabris; sarmentis et innovationibus immaturis brunneis et dense breviterque cano-pubescentibus; nodis annulatis; cicatricibus foliorum sessilibus; internodiis abbreviatis 5--16 mm. longis; foliis decussato-oppositis plerumque ad apicem sarmentorum juveniliū confertis; petiolis subgracilibus 3--12 mm. longis dense breviterque pubescentibus; laminis leviter membranaceis vel chartaceis atro-viridibus, in siccitate nigrescentibus, ellipticis 5.2--10.5 cm. longis, 2.2--4.4 cm. latis, breviter acuminatis, argute sed minute serratis fere usque ad mediam vel subintegris, ad basin abrupte acutis vel breviter cuneatis, non glanduliferis, supra parce strigilloso-puberulentibus vel glabris, subtus (praesertim in venis majoribus et in juventute) dense breviterque pubescentibus vel interdum subvelutinis; costa gracili, supra plana vel impressa, subtus prominente; venis secundariis utroque 5--7 adscendentibus saepe non valde arcuatis, ad marginem anastomosantibus; reticulo venulorum gracili saepe obscuro; racemis erectis 7--13 cm. longis et usque ad 2.5 cm. latis densissime multifloris ramulos et sarmenta axillaria terminantibus; pedunculo gracili abbreviato 5--8 mm. longo dense cano-pubescente; rhachide gracili dense cano-pubescente; pedicellis gracillimis 2--3.5 mm. longis dense pubescentibus; prophyllis minutis setaceis plerumque non conspicuis; floribus plerumque in fasciculis 2-, 3-, vel multifloris secus rhachidem dispositis, numerosissimis; calyce tubuloso-campanulato ca. 4.9 mm. longo et 2.5 mm. (ad apicem) lato, extra densiuscule pubescente, intus glabro, in latere inferiore (abaxiali) usque ad 1.8 mm. fisso, 5-costato, costis 3 superioribus in apiculationes brevissimas ca. 0.2--0.3 mm. longas terminantibus (costa centrali saepe paullo majori quam costis 2 lateralibus), costis 2 inferioribus in apiculationes obsoletas vel nullas terminantibus; corolla hypocrateriformi zygomorpha non valde curvata, tubo obconico ca. 6.5 mm. longo et ad basin 0.5 mm. lato, supra usque ad 3.6 mm. infra limbum ampliato, extra glabro, intus ad oram leviter breviterque pubescente, lobis 5 extra leviter puberulentibus intus breviter pubescentibus, lobis 2 supremis (adaxialibus) minimis ovato-lingulatis ca. 1 mm. longis et ad basin 1.5 mm. latis ad apicem rotundatis, lobis 2 lateralibus mediocriter magnis triangulato-ovatis ca. 2--3 mm. longis et ad basin 2--2.8 mm. latis ad apicem rotundatis, lobo infimo triangulato-ovato ca. 3.5 mm. longo et ad basin 3 mm. lato; staminibus fertilibus 4 didynamis ca. 2 mm. infra oram tubae corollae insertis, inferioribus 2 maximis (filamentis ca. 3.2 mm. longis), lateralibus 2 brevioribus (filamentis ca. 1.2 mm. longis), stamine quinto ad staminodium filiforme ca. 1 mm. longum et ca. 1 mm. infra stamina fertilia insertum reducto; antheris sagittatis dorsifixis ca. 1 mm. longis, thecis ad basin divergentibus

entibus; stylo simplici terminali ca. 7.1 mm. longo glabro, apicem versus angustato, ad apicem lateraliter flectente, supra convexo ovato complanato et stigmatifero; ovario fusiformi ca. 1.3 mm. longo et 0.5 mm. diametro, ad apicem in stylum abrupte attenuato, glabro 2-loculari, quoque loculo 1-ovulato; ovulis in axilla exteriori dissepimenti circa ad dimidiam ovarii affixa; calyce fructifero et fructibus non visis. Fig. 13.

Type collected by José Steinbach (No. 7240) at Bañado, Rio Surutu, alt. 400 m., Sara, Santa Cruz, Bolivia, October 1, 1925, and deposited in the herbarium of the Naturhistoriska Riksmuseet at Stockholm. It ascends to 800 m. and seems to be endemic to the mountains of Bolivia.

The genus *Recordia* is a member of the Verbenoideae - Petreaeae of Briquet, although in habit it greatly resembles the genus Citharexylum. Very superficially the genus also resembles the rubiaceous genus Alseis, especially in habit, but the epigynous flowers of the latter genus of course at once distinguish it from ours.

VITEX KLUGII Moldenke, sp. nov. Arbor 4 m. alta; ramulis gracilibus tetragonis plusminus brevissime strigoso-pilosis vel puberulentibus; foliis oppositis 3-foliolatis; petiolis gracilibus ca. 6 cm. longis puberulentibus, supra sulcatis, ad apicem ampliatis; petiolulo centrali ca. 12 mm. longo, petiolulis lateralibus 6--7 mm. longis, parce strigoso-pilosis; laminis foliolorum membranaceis ellipticis 18--22.5 cm. longis, 8.5--10.2 cm. latis (centrali quam lateralibus paullo majori) integris, ad apicem acuminatis, ad basin acutis, utrinque glabris vel in nervatione supra sparsissime subtus plusminus parce strigillosis; venis secundariis utroque 10--12, ad marginem arcuatim confluentibus; inflorescentiis cymosis supra-axillaribus oppositis usque ad 6.5 cm. longis et ca. 4 cm. latis ubique brevissime strigosis ca. 20-floris insigniter dichotomis, ramulis cymorum complanatis ad apicem amplissimis; pedicellis filiformibus 1.5--2 mm. longis dense strigosis; floribus caeruleis et albis (teste Klug); calyce tubuloso-campanulato ca. 5.4 mm. longo, 2.6--2.8 mm. diametro, breviter strigoso (pilis albidis arcte adpressis), margine 5-dentato 2-labiato, dentibus 2 majoribus 3 minoribus; corolla zygomorpha, tubo recto cylindrico ca. 7.7 mm. longo, extra dense strigoso-pubescente (praeter 1.5--2.3 mm. inferiorum longitudinis), intus ad oram longe piloso, ad basin 1.5 mm. lato, ad apicem usque ad 3.1 mm. ampliato, limbo 5-partito, lobis 4 parvis triangulari-ovatis ca. 2.8 mm. longis et ad basin 1.8 mm. latis usque ad apicem acutam angustatis, lobo quinto magno elliptico ca. 4.9 mm. longo et 2.8 mm. lato, ad apicem acuto; staminibus 4 subaequalibus, exsertis, ca. 2.6 mm. supra basin tubae corollae insertis; filamentis ca. 7 mm. longis ad

basin longe pilosis, superne glabris; pistillo longe exserto; stylo gracili ca. 14 mm. longo glabro; stigmatibus bifido, ramulis 0.5 mm. longis divergentibus; calyce fructifero et fructibus non visis.

The type of this species was collected by G. Klug (No. 625) in a forest at Mishuyacu, near Iquitos, alt. 100 m., Loreto, Peru, in December, 1929, and is deposited in the herbarium of the New York Botanical Garden.

VITEX LUCIDA Moldenke, sp. nov. Arbuscula usque ad 5 m. alta; ramulis gracilibus obtuse tetragonis plusminus ad apicem breviter flavo-pubescentibus, internodiis demum glabrescentibus; foliis oppositis 3--5-foliolatis; petiolis gracilibus 3--4.5 cm. longis breviter flavo-strigillosis, supra complanatis et canaliculatis, ad apicem non ampliatis; foliolis in magnitudine inter se valde variis, plerumque foliolo centrali maximo, foliolis 2 lateralibus mediocribus, et foliolis 2 basalibus parvis (interdum minimis vel nullis!); laminis foliolorum firme membranaceis atro-viridibus nitidis ellipticis vel oblanceolatis usque ad 8.5 cm. longis et 4.2 mm. latis integris, ad apicem obtusis vel acutis (interdum in foliolis minimis retusis), ad basin acutis vel interdum subrotundatis, utrinque praeter costam leviter strigillosam glabratis; petiolulis gracilibus 1--10 mm. longis strigillosis in foliolo centrali longissimis, in foliolis basalibus brevissimis; inflorescentiis axillaribus oppositis thyrsoides non divaricatis usque ad 13 cm. longis et ca. 3.5 cm. latis, laxe sparseque multifloris; pedunculo 4--5.5 cm. longo sympodiisque pergracilibus minute strigillosis, ramulis trifloris in ca. 4 jugam et 1 terminalem dispositis; pedicellis pergracilibus 1--11 mm. longis glabris; calyce cupuliformi zygomorpha ca. 1.9 mm. longo et 2 mm. diametro glabro, margine plusminus bilabiato 5-dentato, dentibus parvis acuminatis, sinibus 3 parvis et 2 profundis; corolla hypocrateriformi violacea, extra minute puberulente, intus dense pilosa, tubo infundibulariformi ca. 4.1 mm. longo recto, ad basin glabram ca. 1.5 mm. lato, ad apicem valde ampliato et 3.6 mm. lato, limbo 5-partito, lobis 4 ovatis parvis ca. 2.3 mm. longis et 1.8 mm. latis acutis, lobo quinto permagno late spathulato venoso ca. 5.2 mm. longo, ad basin et usque ad 1.5 mm. longitudinis ca. 2.8 mm. lato, apicem versus valde dilatato ca. 4.9 mm. lato, ad apicem abrupte breviterque acuminato; staminibus 4, didynamis ca. 5.9 mm. longis, fere ad basin tubae corollae insertis, exsertis; filamentis gracilibus pilosis, ad basin ampliatis complanatisque et densiore longioreque pilosis; antheris obcordatis ca. 0.8 mm. longis et latis; pistillo exserto; stylo ca. 5.2 mm. longo glabro, ad apicem bifido, ramulis stigmatiferis ca. 0.5 mm. longis divaricatis; ovario subgloboso ca. 1 mm. longo et diametro subglab-

ro; calyce fructifero patelliformi indurato plerumque valde bilabiato ca. 2.5 mm. longo et 5--6 mm. diametro, margine scarioso; fructibus subglobosis flavis, in siccitate leviter 4-sulcatis.

The type of this hitherto neglected species was collected by E. J. Valeur (No. 630) in an open pine forest at Jicomé, Loma Bajita, district of San José, prov. Santiago, Dominican Republic, at an altitude of 600--700 m., May 13, 1931, and is deposited in the herbarium of the New York Botanical Garden. Additional specimens are Valeur 695 from the Dominican Republic and León 11,801 and C. Wright 1355 from Oriente, Cuba. Common names recorded by Valeur are "palo perrito" and "mata becarro".

The species is related to V. umbrosa Sw., of Jamaica, with which it has hitherto been confused. The latter, however, differs in its much larger and more acute leaflets, its much longer and stronger petioles and petiolules, the former being prominently ampliate and disk-shaped at the apex, its large inflorescences, longer peduncles, puberulent calyx, and many other characters. V. divaricata Sw. is at once distinguished by its conspicuously divaricate inflorescences.

VITEX RUSBYI Moldenke, sp. nov. Arbor usque ad 15 m. alta; ramis crassis tetragonis furfuraceo-pubescentibus; ramulis et sarmentis densissime ferrugineo-velutinis; foliis oppositis 5--7-foliolatis; petiolis crassiusculis usque ad 10.5 cm. longis dense ferrugineo-velutinis, supra complanatis et canaliculatis, ad apicem ampliatis; petiolulis 1--6 mm. longis velutinis, in longitudine inter se variis, petiolulo centrali plerumque maximo; laminis foliolorum membranaceis supra in siccitate brunnescentibus, ellipticis vel oblongis, usque ad 7.7 cm. longis et 2.8 cm. latis acutis integris, ad basin acutis, supra breviter pubescentibus, subtus dense ferrugineo-velutinis; inflorescentiis axillaribus numerosis cymosis multifloris 2.5--5.5 cm. longis et 2--3.5 cm. latis divaricatis; pedunculo crassiusculo complanato 1.2--3 cm. longo furfuraceo-pubescente vel dense ferrugineo-velutino; pedicellis 1--1.8 mm. longis velutinis; calyce campanulato crasso plusminusus zygomorpha ca. 3.9 mm. longo et 4.2 mm. diametro velutino-pubescente, margine variabile plerumque plusminusus 2-labiato et 5-lobato (interdum labio uno fere elobato), lobis triangularibus acutis interdum reflexis; corolla hypocrateriformi extra dense velutino-pubescente subrecta vel curvata, tubo plusminusus urceolato ca. 7.2 mm. longo, intus piloso, ad basin glabram ca. 1.8 mm. lato, medium versus ca. 4.1 mm. lato, ad apicem ca. 3.3 mm. lato, limbo 5-partito, lobis 4 parvis ovatis ellipticis ca. 2.5 mm. longis et 2.6 mm. latis acutis,

lobo quinto magno late spatulato ca. 3.6 mm. longo, ad basin ca. 2.3 mm. lato, apicem versus valde dilatato et ca. 4.6 mm. lato, ad apicem rotundato vel subacuto; staminibus 4 distincte didynamis fere ad basin tubae corollae insertis exsertis ca. 5.2 mm. longis; filamentis ad basin complanatis ampliatisque et dense longeque pilosis, supra basin subglabris; antheris parvis obcordatis; pistillo exserto; stylo ca. 7.5 mm. longo glabro, ad apicem bifido, ramulis stigmatiferis ca. 0.5 mm. longis divaricatis; ovario subgloboso ca. 1.2 mm. longo et diametro subglabro; calyce fructifero et fructibus non visis.

The type of this handsome species was collected by Henry Hurd Rusby and Francis Whittier Pennell (No. 1143) in a light forest on a rocky hill at the gorge above Natagaima, Huila, Colombia, August 12, 1917, and is deposited in the herbarium of the New York Botanical Garden. The collectors describe the flowers as lavender-blue. Other specimens of this species are Rusby & Pennell 221, André 1942 and 4155, and Rose & Rose 23,488.

VITEX TRIFLORA var. QUINQUEFOLIOLATA Moldenke, var. nov.
Haec varietas a forma speciei typica et omnibus aliis varietatibus recedit foliis 5-foliolatis.

The type of this distinct variety was collected by B. A. Krukoff (No. 5765) on terra firma near the mouth of the Rio Macauhan (tributary of the Rio Yaco), lat. $9^{\circ}20'$ S., long. 69° W., Acre Territory, Brazil, September 3, 1933, and is deposited in the herbarium of the New York Botanical Garden. The collector describes the plant as a tree 45 feet tall, with a stem-diameter of 3 inches.

Explanation of Figure 13

- A. Branchlet X 0.5
- B. Lateral view of one flower X 2
- C. Front view of calyx X 2.6
- D. Cross-section of ovary X 16
- E. Top of style and stigma X 2.5
- F. One of the large stamens X 2.5
- G. One of the small stamens X 2.5
- H. Corolla spread open X 2.5



Fig. 13. Recordia boliviana Moldenke

PLANTAE KRUKOVIANAE - III

H. A. Gleason

The species described below were collected by Mr. B. A. Krukoff on his fourth expedition to Brazilian Amazonia. The types are deposited in the herbarium of the New York Botanical Garden and are duplicated in several other herbaria.

RYANIA SAURICIDA Gleason, sp. nov. Arbor parva 6 m. alta ramulis gracillimis angulatis glabris; petioli 2-3 mm. longi breviter stellato-pilosi; laminae membranaceae, oblongae vel elliptico-oblongae, 10-18.5 cm. longae, 4-6 cm. latae, acuminatae et breviter mucronatae, integrae, basi acutae, utrinque glaberrimae, venis lateralibus in utroque latere ca. 7 curvato-adscentibus, venulis utrinque creberrime reticulatis et paulo elevatis; stipulae persistentes setaceae 5-7 mm. longae breviter hispidulae; pedicelli in axillis solitarii ca. 5 mm. longi curvati crassi angulati tomentosi, pilis stellatis fuscis; flores jam immaturi; calyx in alabastro inaperto 10 mm. longus anguste conicus acutus, dense fusco-stellato-tomentosus; filamenta nondum elongata; antherae anguste lineares jam usque ad 5 mm. longae basi sagittatae apice mucrone 0.5 mm. longo ornatae; ovarium sessile ovoideum densissime hirsutum; stylus crassus glaber 3.5 mm. longus (verisimiliter in floribus maturis longior) apice brevissime 6-fidus, stigmatibus 6 carnosius rotundatis.

Type, Krukoff 5815, from Sepatini, on the Purus River, Amazonas. It inhabits the "restinga alta," just above the varzea land above water at most time of the year.

The genus *Ryania* apparently contains about ten species. In *R. Riedeliana* and *R. Sagotiana* the ovary is stipitate; in *R. canescens* and *R. Mansoana* the leaf is tomentose beneath; in *R. dentata* the short anthers are not mucronate; in *R. Candollei*, *chocoensis*, *speciosa*, and *stipularis* the leaves are pubescent beneath and usually rounded at the base. The remaining species, *R. acuminata* Spruce, appears to be most closely similar to ours, but differs in its smaller and proportionately narrower leaves, which are more narrowly acute at the base. The bark of *R. sauricida* is used by Indians for poisoning alligators, whence the specific name.

TRICHILIA KRUKOVII Gleason, sp. nov. Sect. *Moschoxylum*: arbor excelsa gracilis 25 m. alta; folia alterna breviter petiolata tota longitudine usque ad 17 cm. metientia, rhach-

ide supra canaliculato minutissime puberulo; foliola subcoriacea, anguste elliptico-oblongata 8--12 cm. longa 2.5--4 cm. lata (infima multo breviora), abrupte acuminata, apice ipso obtuso, integra, basi longe cuneata, supra glabra subtus minutissime pubescentia, venis secundariis utroque latere ca. 12 leviter curvato-adscendentibus supra planis subtus elevatis; paniculae confertae ramosae rhachidem foliorum aequantes vel dimidio excedentes, strigulosae, bracteolis triangulari-ovatis arcte adpressis strigosulis acutis 0.5--0.8 mm. longis; pedicelli veri crassi 0.5--1 mm. longi; flores 4-meri; calyx gamosepalus 3 mm. diam., ad medium in lobos 4 late rotundatos vel truncatos fissus, extra leviter strigosulus; corolla ad anthesin 6 mm. diam., extra parce strigosa, petalis carnis recurvo-patulis triangulari-ovatis acutis 3.5 mm. longis; staminum tubus erectus 1.6 mm. altus 3.2 mm. diam., extra tenuissime puberulus intus breviter villosus, margine breviter 16-denticulatus, dentibus 8 alternis setaceo-subulatis erectis 1 mm. longis parce villosulis; antherae 8 sessiles anguste triangulares 1 mm. longae; discus carnosus obscure 8-gibbosus, cum ovario late ovoideo 0.7 mm. longo dense pubescens; ovarium 2-loculare, ovulis in quoque loculo 2 ex apice collateraliter pendentibus; stylus crassus erectus glaber 0.8 mm. longus, stigmate subcapitato integro; capsula bivalva atropurpurea (tantum in sicco) anguste obovoidea 15--18 mm. longa, valvis post maturitatem divergentibus recurvatis et arcte involutis; arillus ruber.

Type, Krukoff 4711, collected on varzea land at the mouth of the Embira River, Jurua Basin, Amazonas.

The species is most closely related to Trichilia Cipo (Juss.) O.DC., as illustrated by Spruce 2237 from the Rio Negro. De Candolle's description, in fact, indicates very little by which the two might be separated, but a dissection of the Spruce specimen shows that the anthers are distinctly ovoid and just half as long (0.5 mm.) and that the subulate teeth of the staminal tube are only a fifth as long (0.2 mm.) as in our plant. The fruits of T. Krukovii are regularly 2-valved, according to the collector, and we are not acquainted with any other species in which the valves become recurved and involute.

BIXA EXOELSA Gleason & Krukoff, sp. nov. Arbor 30-metralis trunco gracili; petioli graciles glabri longitudine inter 25 et 70 mm. variables; laminae subcoriaceae utrinque glabrae et virides ovatae 10.5--19 cm. longae 4.5--9 cm. latae, sensim longe acuminatae, basi late obtusae subrotundatae vel rarissime subtruncatae nunquam cordatae, 5-nerviae venulis utrinque reticulatis parum elevatis; stipulae jam delapsae; flores nobis ignoti; panicula fructifera ut videtur 15 cm. longa ramis crassis patulis apice minutissime tom-

entellis; capsula ferruginea reniformis lateraliter paulo compressa 45 mm. lata 30 mm. longa, pericarpio extra dense ferrugineo-tomentosa pilis apice glanduliferis, aculeis patulis rigidis 2--8 mm. longis infra medium ferrugineo-tomentosis dense oblecto; semina complanata obovato-oblonga 4.5 mm. longa 3 mm. lata, praeter chalazam flavescentem castanea, raphe leviter costata, funiculo elongato apice valde dilatato semen ad quartam partem tegente.

Type, Krukoff 4960, collected June 21, 1933, in a high forest on terra firma near the mouth of the Rio Embira, Jurua basin, Amazonas.

Bixa Orellana L., the common species of pantropic cultivation, is so widely distributed and so variable in tropical America that ample justification must be sought for the description of a new species. In examination of numerous specimens of B. Orellana, the fruit is found to be flattened ovoid, distinctly tapering to the summit, with smooth pericarp and thorns; the leaves vary from truncate to subcordate at base and are in most cases distinctly marked beneath with minute pits which appear black under the lens. Variations in most of these points may be discovered, especially in the absence of pits, but no specimens have been seen with the least trace of glandular hairs on the pericarp or with such a broadly reniform capsule. Our species differs also in the strongly flattened seeds and costate raphe.

Bixa urucurana Willd., considered by Pilger as merely a variety of B. Orellana and the same as B. sphaerocarpa Triana and B. platycarpa R. & P., has leaves scaly beneath; its capsules approach ours in shape but are spherical. Glandular pubescence is not mentioned in its description, while in our species it is so conspicuous that it could scarcely be overlooked, even in the most casual observation.

In Bixa arborea Huber the capsules are described as rugose and minutely papillose under the lens, not aculeate, and 4-costate at base. The chalaza is white surrounded by a narrow zone of red and the body of the seed is blue. Its leaves are rounded at base and firm as in our species.

Bixa Orellana is regularly a low spreading tree rarely more than 8 m. tall. Bixa arborea is said to reach a height of 15 m.; apparently it is also stout and widely spreading, since its trunk is 20-30 cm. in diameter. Bixa excelsa is a slender tree with the typical shape of many other species of the rain forest, being only 23 cm. in diameter near the base when nearly 30 meters tall.

HENRIETTELLA SYLVESTRIS Gleason, sp. nov. Arbor mediocris 15 m. alta; rami superiores graciles primum dense strigosi, pilis conicis subulatis, demum glabrescentes; petioli 1--2 cm. longi graciles subtus strigosi supra breviter hispidi;

laminae obovato-oblongae chartaceae, usque ad 14 cm. longae 7.5 cm. latae, abrupte et obtuse acuminatae, integrae, basi acutae vel obtusae, 5-pli-nerviae, subtus ad venas venulasque breviter strigosae, inter venas scabrae pilis erectis brevibus conicis, supra scabra, ad costam breviter hispidae et sub epidermide lineis brevibus crystallos lineares tegentibus dense notatae; flores 5-meri ad nodos defoliatos 2--3 in fasciculis sessilibus, pedicellis gracillimis 5--10 mm. longis fere glabris; hypanthium parvum glabrum in fructo immaturo 3.7 mm. longum; calycis tubus 0.2 mm. longum, lobi late rotundati, 1.7 mm. lati, a toro 0.5 mm. longi, dentibus exterioribus minutis verruciformibus; petala et stamina adhuc ignota.

Type, Krukoff 5272, collected on terra firma at the mouth of the Rio Macauhan, Acre Territory.

More than half of the South American species of the genus have sessile or subsessile flowers, and of the seven with pedicelled flowers all but one have smooth leaves. This one is H. towarensis Cogn., a Venezuelan species with scabrous hypanthium and completely different pubescence.

H. sylvestris seems to be common and widely distributed in western Amazonia. Specimens collected along the Amazon River by Williams (1717, 1736, 1864, 2091, 2972) were once identified by me as H. verrucosa Triana. It also extends up the Andes to at least 600 m. (Macbride 5493).

BERNOULLIA SWIETENIOIDES Gleason, sp. nov. Arbor excelsa 55 m. alta, 1.35 m. in diametro; ramuli minores cinerei tenuiter rugoso-costati; folia unifoliolata; petioli graciles 35-70 mm. longi, basi apiceque paullo incrassati et corrugati vel transversim incisi; laminae foliolorum firmulae late obovato-oblongae vel ellipticae, basi rotundatae, utrinque glabrae, penninerviae, nervis secundariis utroque latere circa 7 adscendentibus leviter arcuatis, nervulis tenuiter reticulatis; inflorescentia et flores ignoti; pedunculus fructiferus 3 dm. longus ut videtur uniflorus; capsula fusiformis fusca glabra, ad apicem obtusum angustata, basi obtusa, 20 cm. longa 7 cm. in diam., ad maturitatem in valvas 5 loculicide dehiscens, 5-locularis; pericarpium crassum lignosum ab endocarpio papyraceo diremptum et dissepimenta papyracea ut in Swietenia; columella papyracea 5-alata ad apicem pedunculi persistens; semina in quoque loculo in seriebus 2 longitudinalibus disposita, in quoque seriei ca. 7, atrocastanea triangularia, ala suberosa 6 cm. longa 15 mm. lata more Swieteniae ornata, quorum 3 basalia superne alata et adscendentia sunt et 4 apicalia alis pendentibus gaudent; cotyledones valde contorti et plicati.

Type, Krukoff 5609, collected on terra firma at Foz do Macauhan, Purus River basin, Acre Territory. The tree has

very high buttress roots, according to Mr. Krukoff.

Few, if any, of the plants recently brought back from Brazil by Mr. Krukoff have as great an interest to the taxonomist as the tree described above. The family to which it belongs remains in question. There is little doubt as to the genus to which it is most closely related and in which it is here placed, but a study of the flowers, as yet unknown, may indicate that it deserves the erection of a new genus.

The genus Bernoullia was proposed by Oliver in 1876, based on a specimen from a tall tree in Guatemala. This plant, illustrated in Hooker's *Icones*, pl. 1169, 1170, was in bloom; the figure of the fruit was taken from a "careful drawing" sent by the collector. The accompanying notes indicate that the fruit is almost indehiscent and the drawing a woody endocarp and dissepiments. The fruit of ours suggests a woody endocarp and dissepiments. The fruit of ours is so extraordinarily like that of the mahogany and so different from that of the Guatemalan plant that another genus is at once suggested.

Bernoullia was described in the Sterculiaceae; Schumann, in the *Natürlichen Pflanzenfamilien*, classed it in the Bombacaceae. Bakhuizen keeps it in that family but suggests that it belongs in the Sterculiaceae instead. Dr. A. J. Panshin, of the New York State College of Forestry, suggests Sterculiaceae on the evidence of its wood structure.

DICLIDANTHERA OCTANDRA Gleason, sp. nov. Frutex 3 m. altus; rami superiores recti glabri subteretes; ramuli floriferi valde divergentes primum tenuiter pubescentes angulati demum subglabri subteretes; petioli 5-8 mm. longi mox glabri; laminae firmulae elliptico-oblongae usque ad 13 cm. longae 6 cm. latae, superiores minores, integrae, basi apiceque obtusae, glabrae (juniores supra ad costam minutissime puberulae), penninerviae, nervis adscendentibus ramosis ca. 8 utroque latere, venulis arcte reticulatis utrinque prominulis; spicae ex axillis superioribus solitariae adscendentes vel suberectae tenuiter pubescentes demum 7 cm. longae; flores sessiles inferne dissiti (in specimine nostro jam delapsi) superne conferti; sepala fere ad basin distincta, oblan- ceolato-oblonga 6.5-7 mm. longa apice rotundata arcte puberula vel tomentella, ad anthesin paulo involuta; corollae tubus 11-12 mm. longus subcarnosus hinc inde pilosulus fere cylindraceus superne paulo ampliatus, lobis 5 patulis vel subrecurvatis obovatis 3.5-4 mm. longis; stamina 8; filamenta isomorpha ad faucem tubi inserta complanata carnosula 1 mm. longa; antherae rotundatae basifixae introrsae 4-locellatae, thecis 2 exterioribus majoribus, 3 ad letere unum corollae 0.8 mm. longae fertiles, 5 gradatim minores usque

0.4 mm. longae et verisimiliter steriles vel substeriles; ovarium superum ovoideum 5-loculare, ovulo in quoque loculo 1 axiali; stylus cylindraceus villosus 3 mm. longus (in alabastro; fortasse ad anthesin longior), stigmatē capitato 0.9 mm. diametro.

Type, Krukoff 5778, collected in terra firma near the mouth of the Rio Macauhan, Acre Territory.

The herbarium of the New York Botanical Garden contains type or authentic material of all three hitherto known species of Diclidanthera. D. octandra differs distinctly from all of them in habit and foliage and most notably in the presence of only 8 stamens. In its general aspect and in all other structural features it is clearly a Diclidanthera. Because of the limited material, it has not been practicable to determine whether the three large anthers are posterior or anterior. The two gaps in the circle of ten lie between the petals.

Barnhartia Gl., referred by me originally, together with Diclidanthera, to the Styracaceae, has since been transferred to the Polygalaceae. Barnhartia also has eight stamens, but the petals are separate and the ovary 2-celled. Our plant unites the staminal features of this genus with the gamopetalous corolla and 5-celled ovary of Diclidanthera and undoubtedly represents a connecting link between the two.

Diclidanthera has been segregated from the Styracaceae for apparently good reasons. Barnhartia has been placed in the Polygalaceae after careful study by competent botanists. Its relationship to Diclidanthera is admitted. The discovery of such an intermediate type as D. octandra seems to justify the union of the two genera in the same family, whether it be Polygalaceae or Diclidantheraceae.

NOTE ON THE GENUS GOETHALSIA PITTIER

H. A. Gleason

Study of an herbarium specimen from Colombia, Lawrance 494, led to the belief that it represented an undescribed genus of Flacourtiaceae. Because of the strong superficial resemblance of the plant to certain genera of Tiliaceae, search was also made for it in that family, where it was soon placed in the recently described genus Goethalsia of Pittier. Comparison with the type material at Washington, through the courtesy of the United States National Museum, verified the identification of the Lawrance plant with Goethalsia isthmica Pittier.

Since it was not possible to reconcile my own belief that the genus is flacourtiaceous with Pittier's assignment of it to the Tiliaceae, a more careful study of its structure was made and two interesting features unknown to Pittier were discovered.

Pittier had before him young fruits and mature flowers. Lacking the younger buds, he never saw the sepals, which are deciduous. The organs described by him as sepals are the petals and those which he termed petals are the corona. Pittier also described the ovary as three-celled, while my microtome sections show beyond a doubt that it is one-celled with three deeply intruded placentae, each of which bears two rows of seeds. The adjacent seeds from two placentae protrude into the false loculus between them and give the appearance of two rows of axile ovules.

Because of these facts, the genus is now transferred to the Flacourtiaceae and an emended description is presented.

Goethalsia Pitt. emend. Gl.

Sepala 3 valvata ante anthesin decidua; petals 5 valvata lanceolato-attenuata extra argenteo-tomentosa; coronae segmenta 5 libera hypogyna e medio ad basin cuneata, quam petalis multo breviora, parte superiore erecta obtusa; stamina 25 libera; ovarium trigonum 1-loculare, placentis 3 alte invaginat, ovulis paucis in quaque placenta biseriatis.

The young buds show the sepals distinctly. They are elliptic, 4 mm. long, and thinly stellate. When the bud reaches 4 mm. in length, the sepals separate from their close valvate union and fall off, while the petals increase in length to 10 mm. Lawrance 494 was collected at 900 m. altitude in the western mountains of Boyacá, a region which has yielded many other new or interesting species.

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PHYTOLOGIA

Designed to expedite botanical publication

Vol. I

January, 1935

No. 3

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Published by H. A. Gleason and Harold N. Moldenke

The New York Botanical Garden

Bronx Park, New York, N. Y.

Price of this number: 50 cents; per volume \$5.00 in advance.

Vol. I, number 2, was issued August 4, 1934.

PLANTAE KRUKOVIANAE - IV

A. C. Smith

The plants described below were collected in Brazil by Mr. B. A. Krukoff. Types of new species are deposited in the herbarium of the New York Botanical Garden and are duplicated in several other American and European herbaria.

LORANTHACEAE

PSITTACANTHUS LEPTANTHUS A. C. Smith, sp. nov. Frutex parasiticus scandens glaber; ramis ramulisque teretibus fuscis, ad nodos continuis; petiolis rugosis 3-6 mm. longis, superne anguste alatis; laminis coriaceis supra viridis subtus fuscis oblongo-ovatis, 10-13 cm. longis, 4-8 cm. latis, basi apiceque acutis, margine integris et leviter revolutis, subtus dense stomatiferis, pinnatinerviis, costa utrinque prominente, nervis secundariis 3 vel 4 in quoque latere utrinque subplanis; inflorescentiis ut videtur solitariis in axillis foliorum, plerumque 4-floris, floribus binis; pedunculis pedicellisque nigrescentibus gracilibus, bracteis minutis; pedicellis 8-10 mm. longis; cupula patelliformi margine integra; calyculo sub anthesi 3-4 mm. longo et 1.5 mm. diametro; perigonio tenuiter carnoso coccineo, maturitate 7-8 cm. longo, ad medium 3-4 mm. diametro, 6-lobato, lobis linearibus (ad 3 cm. longis) sub anthesi recurvatis, 1-1.5 mm. latis, apice acutis, margine integris, ligula nulla; filamentis gracilibus circiter 10 mm. longis, supra medium perigonii adfixis; antheris dorsifixis oblongis 3-4 mm. longis, apice obtusis; stylo perigonium aequante, stigmate ellipsoideo papilloso.

Type, Krukoff 4709, collected June 10, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. It is allied to the group of species with united perigonium lobes, lacking basal ligules. From P. siphon Eichl., its nearest ally, the new species is distinguished by its broader leaves and simpler inflorescences, which are branched only twice. The pedicels of P. leptanthus are long and slender; the perigonium is flaring from a very slender base.

MYRISTICACEAE

DIALYANTHERA OLACOIDES A. C. Smith, sp. nov. Frutex; ramis glabris, ramulis teretibus, partibus juvenilibus sericeis mox glabris; petiolis subsericeis gracilibus canaliculatis 5-8 mm. longis; laminis subcoriaceis elliptico-oblongis, 9-14 cm. longis, 3.5-5 cm. latis, basi acutis, apice obtuse acuminatis, margine integris, utrinque glabris demum

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rugulosis, costa subtus prominente, nervis secundariis 9-11-jugis patulis prope marginem arcuatis conjunctis, supra planis vel impressis subtus elevatis, venulis inconspicuis; inflorescentiis ♂ axillaribus vulgo binis ad 8 mm. longis, ubique ferrugineo-sericeis; floribus 2-4 in fasciculis, bracteis minutis subteretibus; pedicellis 1-3 mm. longis; perigonio infundibuliformi 3 mm. longo, basi bracteola parva suffulto, intus glabro, lobis 3 ovatis acutis, 1.2 mm. longis, 1.5 mm. latis; filamentis in columnam glabram carnosam cylindricam 1.8 mm. longam connatis; antheris 3 oblongis liberis, 0.8-1 mm. longis, basi affixis, loculis 2 connectivo carnosio sustentis.

Type, Krukoff 4740, collected June 10, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. Another collection from the same locality is Krukoff 4972. The extremely short inflorescences differentiate this species from all others of the genus. D. acuminata Standl., of Panama, approaches the new species in this respect, but is otherwise very different. The enlarged anther connective of D. olacoides is also noteworthy.

MONIMIACEAE

MOLLINEDIA KRUKOVII A. C. Smith, sp. nov. Frutex circiter 4 m. altus; ramis ramisque teretibus striatis, juventute cinereo-pilosulosis mox glabris; petiolis oppositis subteretibus canaliculatis 1.5-3.5 cm. longis, velut ramulis novellis pilosulosis; laminis chartaceis ovatis, 20-33 cm. longis, 11-17 cm. latis, basi acutis, apice acuminatis (acumine 1 cm. longo), margine integris et leviter revolutis, supra glabris, subtus sericeis (pilis viridibus basi 2-3-fidis circiter 0.2 mm. longis) demum glabrescentibus, copiose sed inconspicue pellucido-punctatis, costa supra elevata subtus prominentissima, nervis secundariis 7-9-jugis arcuato-adscententibus utrinque elevatis, venulis copiose reticulatis subtus prominulis; inflorescentiis ♂ incompletis; pedicellis nigrescentibus 8-10 mm. longis, cinereo-pilosulosis; floribus ♂ flavis extra velut pedicellis; receptaculis carnosis intus glabris; tepalis carnosis intus glabris, 2 exterioribus late ovatis, 8-9 mm. longis, 9-10 mm. latis, margine integris et submembranaceis, 2 interioribus oblongo-orbicularibus, circiter 8 mm. longis et latis, margine membranaceis et irregulariter laciniatis; staminibus circiter 50, filamentis glabris carnosis circiter 1.5 mm. longis, antheris oblongis, 3 mm. longis, 1-1.5 mm. latis.

Type, Krukoff 4819, collected June 14, 1933, on "terra firma" near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. It falls into the Section Appendiculatae Perk., being related to M. Selloi.

(Spreng.) A. DC., M. latifolia (P. & E.) Tul., and M. Rusbyana Perk. From these species it is readily distinguished by its large entire leaves, much larger flowers, and more numerous stamens.

LAURACEAE

Mr. Krukoff's present collection is particularly rich in large forest trees of this family, of which about 45 species are represented. Of these, eleven are apparently new species.

AIQUEA RUBRA A. C. Smith, sp. nov. Arbor ad 10 metralis, trunco 8 cm. diametro; ramulis striatis glabris rubellis; petiolis crassis profunde canaliculatis 8-15 mm. longis; laminis coriaceis glabris oblongis, 18-25 cm. longis, 4-6 cm. latis, basi attenuatis, apice acuminatis (apice ipso obtuso), margine integris et leviter revolutis, costa rubella utrinque prominente, nervis secundariis utroque 5-7 adscendentibus supra prominulis subtus prominentibus, venulis reticulatis supra immersis subtus prominulis; paniculis rubris glabris gracilibus multifloris 10-20 cm. longis, 2-4 in axillis foliorum; floribus fulvis sub anthesi 2-3 mm. longis; pedicellis gracilibus 6-8 mm. longis; perianthii lobis 6 aequalibus ovatis membranaceis, minute luteo-glandulosis, 0.8 mm. longis et latis; staminibus 6 fertilibus glabris, 1 mm. longis, antheris bilocellatis truncatis filamentis aequantibus; seriei tertiae staminodiis filiformibus 0.6 mm. longis, basi glandulis 2 sessilibus 0.5 mm. diametro auctis; seriei quartae staminodiis carosis ovatis cordatis sessilibus 0.5 mm. diametro; ovario glabro sub anthesi 1 mm. longo, quam stylo paullo brevior, stigmate truncato.

Type, Krukoff 4606, collected June 1, 1933, at Foz do Terauaca, basin of Rio Jurua, State of Amazonas. It is related to A. scandens Ducke, but that species is a liana with long-petioled broad leaves. By its filiform staminodes (of the third series) and glabrous filaments, the flowers of the new species differ from those of the liana. From A. guyanensis Aubl., the new species differs by the texture of its leaves and its larger flowers, as well as by the shape of its staminodes.

ANIBA ELLIPTICA A. C. Smith, sp. nov. Arbor ad 12 metralis, trunco 6 cm. diametro; ramis ramulisque subteretibus glabris; petiolis nigrescentibus canaliculatis 13-20 mm. longis; laminis subcoriaceis glabris ellipticis, 13-20 cm. longis, 7-10 cm. latis, basi cuneatis, apice obtusis, margine integris, costa utrinque prominente, nervis secundariis utroque 6-8 patulis prope margines anastomosantibus supra saepe planis subtus prominentibus, venulis copiose reticulatis supra immersis subtus prominulis; inflorescentiis ut vi-

detur solitariis e ramulis 5 mm. supra axillis foliorum orientis, 8-12 cm. longis, ramulis et floribus cinereo-tomentellis; pedicellis 2-2.5 mm. longis; floribus 3 mm. longis, 2-2.5 mm. diametro; perianthii lobis 6 inaequalibus late ovatis subacutis intus glabris, exterioribus 1 mm. longis et 1.5 mm. latis, interioribus 1.5 mm. longis et 1.8 mm. latis; staminibus 9 fertilibus 1.5 mm. longis, filamentis carnosis pilosis quam antheris duplo longioribus, antheris apice obtusis, seriei tertiae filamentis basi glandulis binis sessilibus 0.3 mm. diametro auctis; gynaeceo glabro 3 mm. longo, stylo ovarium aequante, stigmate truncato.

Type, Krukoff 5601, collected Aug. 22, 1933, on "terra firma" near mouth of Rio Macauhan (tributary of Rio Yaco), basin of Rio Purus, Territory of Acre. In having unequal perianth segments, the new species resembles A. Brittonii Mez, from which it differs by its longer petioles and differently shaped larger leaves.

ANIBA JURUENSIS A. C. Smith, sp. nov. Arbor ad 25 metralis, trunco circiter 18 cm. diametro; ramis ramulisque nigrescentibus striatis, juventute cinereo-puberulis demum glabris; petiolis gracilibus 8-12 mm. longis puberulis; laminis chartaceis oblongis, 14-20 cm. longis, 4-7 cm. latis, basi cuneatis, apice longe acuminatis (acumine 1.5-2 cm. longo), margine integris et leviter revolutis, supra glabris nitidis, subtus fuscis arcte cinereo-puberulis, costa supra saepe impressa subtus prominentissima, nervis secundariis utroque 3-5 adscendentibus supra prominulis subtus prominentibus, venulis reticulatis utrinque prominulis; inflorescentiis ad apices ramulorum in axillis foliorum parvorum congestis, 4-10 cm. longis, 20-50-floris, ramulis et floribus cinereo-puberulis; floribus in cymulis parvis bracteolis 2 mm. longis mox deciduis subtentis; pedicellis ad 3 mm. longis; perianthii tubo 1.5 mm. longo, lobis 6 aequalibus oblongis, 1.2 mm. longis, 0.7 mm. latis, apice rotundatis, utrinque minute puberulis, margine leviter incrassatis; staminibus 9 fertilibus, serierum exteriorum 0.4 mm. longis et latis, antheris subsessilibus, apice emarginatis, seriei tertiae filamentis brevissimis, glandulis binis sessilibus auctis, antheris minutis; ovario glabro sub anthesi 1.5 mm. longo, stylo subnullo, stigmate discoideo, 0.5 mm. diametro; bacca juvenili in cupula nigrescente obovoidea immersa.

Type, Krukoff 4775, collected in June, 1933, near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. Krukoff 4932, from the same locality, also represents the species; it is from a juvenile plant noted as a shrub 5 meters high, with slightly broader leaves, which are silvery-sericeous beneath, and shorter in-

florescences than the type. The species is related to A. Muelleriana Mez, from which it differs by the shape and puberulence of its leaves, its minute subsessile anthers, and its discoid stigma.

ANIBA KRUKOVII A. C. Smith, sp. nov. Frutex 5 m. altus; ramulis fuscis glabris striatis; petiolis rugosis semiteretibus glabris 10-16 mm. longis; laminis chartaceis glabris elliptico-oblongis, 13-20 cm. longis, 5-7 cm. latis, basi acutis, apice caudato-acuminatis, margine integris, nervis secundariis utroque 2 vel 3 adscendentibus, cum costa supra elevatis subtus prominentibus, venulis reticulatis utrinque prominulis; inflorescentiis 1-3 in axillis foliorum, 2-3 cm. longis, 15-25-floris, ramulis et floribus cinereo-sericeis; floribus 3 mm. longis in cymulis parvis subsessilibus; perianthii lobis 6 aequalibus oblongis, 1.8 mm. longis, 1.4 mm. latis, apice rotundatis, utrinque dense luteo-glandulosis; staminibus 9 fertilibus 1 mm. longis, serierum exteriorum antherarum connectivis subacutis, filamentis pilosis quam antheris paullo brevioribus, seriei tertiae filamentis dilatatis sericeis, glandulis binis sessilibus 0.3 mm. diametro auctis; ovario glabro sub anthesi 1.3 mm. longo, stylo breviori, stigmate membranaceo irregulariter discoideo.

Type, Krukoff 5023, collected June 26, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. It is related to A. Muelleriana Mez and the above described new species, from both of which its few ascending lateral nerves distinguish it. The pale sericeous pubescence of the short inflorescence and the glandular perianth segments also characterize the new species.

ANIBA FLEXUOSA A. C. Smith, sp. nov. Frutex glaber; ramis ramulisque teretibus olivaceis; petiolis angulatis 15-25 mm. longis; laminis chartaceis viridis elliptico-oblongis, 20-30 cm. longis, 10-15 cm. latis, basi cuneatis vel subrotundatis, apice caudato-acuminatis (apice ipso 1-2 cm. longo obtuso), margine integris, costa utrinque prominente, nervis secundariis utroque 8-11 patulis prope margines adscendentibus anastomosantibus utrinque elevatis, venulis copiose reticulatis utrinque prominulis; inflorescentiis ut videtur solitariis axillaribus ad 15 cm. longis, 15-20-floris, rachide flexuosa, ramulis secundariis rectis 12-20 mm. longis, pedunculis 5-7 mm. longis, pedicellis brevissimis; floribus 3 mm. longis, tubo obconico quam lobis longioribus; perianthii lobis aequalibus oblongis subacutis, 1.3 mm. longis, 1 mm. latis; staminibus 9 fertilibus; serierum exteriorum oblongis 0.5 mm. longis et latis, basi parce pilosis, antheris subsessilibus, connectivis productis obtusis; seriei tertiae

deltoides, 0.8 mm. longis et latis, antheris minutis, connectivis productis obtusis, filamentis dilatatis sericeis quam antheris duplo longioribus, basi glandulis binis sessilibus 0.3 mm. diametro auctis; ovario glabro sub anthesi 1.5 mm. longo, stylo subnullo, stigmate discoideo 0.8 mm. diametro.

Type, Krukoff 5030, collected June 21, 1933, on "terra firma" near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. From A. citrifolia (Nees) Mez, probably its closest relative, the new species differs by its much larger leaves, its lax few-flowered glabrous inflorescence, and its small subsessile outer anthers.

ENDLICHERIA FORMOSA A. C. Smith, sp. nov. Arbor ad 10 metralis, trunco 8 cm. diametro; ramulis teretibus lenticellatis glabris vel juventute parce pilosis; petiolis rugosis 15-25 mm. longis; laminis chartaceis utrinque minute puberulis mox glabris obovato-ellipticis, 15-22 cm. longis, 5-9 cm. latis, apice breviter acuminatis, margine integris, nervis secundariis utroque 9-11 cum costa supra elevatis subtus prominentibus, venulis copiose reticulatis utrinque peracute prominulis; inflorescentiis axillaribus solitariis multifloris 7-10 cm. longis, ramulis minute tomentellis, pedicellis 2 mm. longis basin versus minute bibracteolatis; floribus ♂ albis subglobosis 1.5 mm. diametro, tubo quam lobis minutis majore; perianthii lobis late deltoides, 0.5 mm. longis, 0.8 mm. latis, obscure pellucido-punctatis; staminibus 9 fertilibus ovatis, 0.6 mm. longis et latis, antheris per poros sublaterales dehiscentibus, connectivis productis subacutis, filamentis contractis quam antheris brevioribus, seriei tertiae basi biglandulosi; gynaecio nullo vel minuto.

Type, Krukoff 5156, collected July 4, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. In foliage, the new species closely resembles E. glaberrima Mez, but has many-flowered inflorescences with differently-shaped smaller flowers. The perianth of the new species is sharply truncate at base, with minute lobes.

PERSEA INAEQUALIS A. C. Smith, sp. nov. Arbor 30 m. alta, trunco 30 cm. diametro; ramis ramulisque subteretibus fuscis juventute cinereo-puberulis; petiolis suboppositis mox glabris canaliculatis 10-15 mm. longis; laminis coriaceis oblongis, 12-16 cm. longis, 5-7 cm. latis, basi cuneatis, apice obtusis vel rotundatis, margine integris, supra fuscis glabris, subtus glaucescentibus minutissime pulverulentis mox glabris, costa supra leviter impressa subtus prominentissima, nervis secundariis utroque 8-11 rectis adscendentibus supra planis subtus prominentibus, venulis reticulatis

utrinque planis vel prominulis; inflorescentiis 1-4 axillaribus 2-4 cm. longis et 10-20-floris, ramulis minutissime puberulis; pedicellis circiter 1.5 mm. longis 2- vel 3-fasciculatis, bracteolis ad 0.8 mm. longis subtentis; perianthii tubo subnullo, lobis albis 6 inaequalibus minutissime ferrugineo-tomentellis, 3 exterioribus deltoideis, 0.5 mm. longis et latis, 3 interioribus oblongis obtusis, 2.5 mm. longis, 1.8 mm. latis; staminibus 9 fertilibus; serierum exteriorum antheris bilocellatis suborbicularibus, 0.6 mm. diametro, apice obtuse apiculatis, introrso-lateraliter dehiscentibus, filamentis gracilibus quam antheris brevioribus; seriei tertiae antheris similibus sed extrorso-lateraliter dehiscentibus, filamentis basi biglandulosis antheras aequantibus; staminodiis 3 lineare-spathulatis acutis 0.8 mm. longis; ovario parce piloso sub anthesi 0.8 mm. diametro, stylo breve, stigmate truncato.

Type, Krukoff 4770, collected June 12, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. It is a species of the subgenus Hemipersea Mez, having bilocellate anthers in common with P. cuneata Meissn. and P. durifolia Mez. On this character the three species would appear to belong to the genus Hufelandia, but on other characters, notably the unequal perianth lobes, they are best placed in Persea. The new species differs from P. durifolia, its nearest ally, by its larger leaves with more numerous secondary nerves, its short-pedunculate inflorescences, its shorter filaments and its differently shaped anthers. A few flowers on the type specimen have 8 perianth lobes and a correspondingly increased number of stamens.

OCOTEA TENELLA A. O. Smith, sp. nov. Arbor 13 m. alta, trunco 7-10 cm. diametro; ramulis teretibus dense et arcte cinereo-tomentellis demum glabrescentibus; petiolis gracilibus tomentellis 4-7 mm. longis; laminis chartaceis elliptico-oblongis, 6-9 cm. longis, 3-5 cm. latis, basi acutis, apice breviter obtuse acuminatis, margine integris, supra glabris et impresso-punctatis, subtus molliter et arcte cinereo-tomentellis, nervis secundariis utroque 3 vel 4 arcuato-adscendentibus, cum costa supra subplanis subtus elevatis, venulis reticulatis subtus prominulis; inflorescentiis solitariis axillaribus gracilibus 2-4 cm. longis et 10-20-floris, rhachide parce tomentella, ramulis glabris 1-2 mm. longis flores 2 vel 3 ad apicem gerentibus; pedicellis ad 1 mm. longis; floribus glabris nigrescentibus maturitate 1.5-2 mm. longis, perianthii tubo breviter obconico, lobis oblongis obtusis, 0.8 mm. longis, 0.5 mm. latis; staminibus 9 fertilibus; serierum exteriorum antheris sessilibus oblongo-orbicularibus, circiter 0.4 mm. longis et latis, apice ob-

tusis vel minute apiculatis; seriei tertiae similibus sed cum filamentis brevissimis biglandulosis; gynaeceo glabro, ovario sub anthesi 0.8 mm. longo, stylo brevissimo, stigmate minute discoideo.

Type, Krukoff 5406, collected Aug. 11, 1933, on "terra firma" near mouth of Rio Macauhan (tributary of Rio Yaco), basin of Rio Purus, Territory of Acre. It is a species of the Section Mespilodaphne, without close relatives, perhaps closest to O. lanata (Nees) Mez, from which it differs by its minute flowers, slender inflorescences, leaf shape, type of pubescence, etc.

NECTANDRA SUPERBA A. O. Smith, sp. nov. Arbor 37 m. alta, trunco 7 dm. diametro; ramulis subteretibus vel leviter angulatis juventute dense et arcte fusco-tomentosis; petiolis rugosis tomentosis 15-25 mm. longis; laminis coriaceis siccitate olivaceis elliptico-oblongis, 15-20 cm. longis, 5-8 cm. latis, utrinque acutis, margine integris, supra praeter costam glabris nitidis, subtus dense et arcte adpresso-pilosis, nervis secundariis utroque 5-7 adscendentibus cum costa supra plus minusve planis subtus prominentibus, venulis copiosissime reticulatis utrinque prominulis; inflorescentiis ad apices ramulorum axillaribus, 5-12 cm. longis, ad 30-floris, ubique arcte tomentosis, ramulis lateralibus 4-10 mm. longis; floribus subsessilibus (pedicellis ad 1 mm. longis) 2-4 in fasciculis, bracteolis minutis deciduis subtentis; perianthii tubo obconico 1.5-2 mm. longo, lobis 6 ovatis acutis, 1.5-2 mm. longis, 1-1.5 mm. latis; staminibus 9 fertilibus; serierum exteriorum antheris subsessilibus suborbicularibus apice obtusis, 0.6-0.7 mm. diametro, dorsaliter glandulas 2-4 minutas nigras gerentibus, loculis in serie unica recta juxtapositis; seriei tertiae staminibus oblongis 0.8 mm. longis, antheris rotundatis glandulosis, filamentis carnosius antheras aequantibus glandulis binis sessilibus auctis; gynaeceo glabro; ovario 1 mm. diametro, stylo 0.5 mm. longo, stigmate truncato.

Type, Krukoff 5757, collected Sept. 3, 1933, on "terra firma" near mouth of Rio Macauhan (tributary of Rio Yaco), basin of Rio Purus, Territory of Acre. It is probably most closely allied to N. lineatifolia (R. & P.) Mez, from which it differs by the prominently reticulate veinlets and the subsessile flowers with blunt anthers.

PLEUROTHYRIUM NOBILE A. O. Smith, sp. nov. Arbor 25 m. alta, trunco 20 cm. diametro; ramulis teretibus crassis rugosis glabris; petiolis crassis fuscis canaliculatis 2-4 cm. longis; laminis coriaceis glabris oblongis, 20-30 cm. longis, 9-13 cm. latis, basi obtusis vel rotundatis, apice cuspidatis vel breviter acuminatis, margine integris, costa

utrinque prominente, nervis secundariis utroque 9-12 arcuato-ascendentibus supra planis vel leviter elevatis subtus prominentibus, venulis reticulatis supra planis subtus prominulis; inflorescentiis solitariis axillaribus quam foliis paullo brevioribus multifloris, ramulis angulatis glabris vel minute ferrugineo-tomentellis, ramulis secundariis 6-9 rectis 3-4 cm. longis; pedicellis 6-10 mm. longis cum floribus velut inflorescentiae ramulis tomentellis; perianthii tubo obconico 3 mm. longo et diametro, lobis 6 carnosius oblongis subacutis, 5-6 mm. longis, 4-5 mm. latis; staminibus 9 fertilibus oblongis truncatis ferrugineo-tomentellis 1.4 mm. longis, locellis 2 introrsis 2 extrorsis vel omnibus lateralibus, filamentis antheras aequantibus contractis, omnibus manifestissime glandulis binis maximis confluentibus cinctis; ovario glabro vel minutissime tomentello globoso sub anthesi 2 mm. diametro, stylo 0.5 mm. longo, stigmate discoideo 0.4 mm. diametro; fructibus juvenilibus globosis apice perianthii lobos gerentibus.

Type, Krukoff 5121, collected July 1, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. Another specimen from the same locality is Krukoff 4800, which is more or less juvenile and bears shorter inflorescences. It is a species related to P. bifidum Nees, from which it differs by its lack of inflorescence tomentum and its large long-pedicelled flowers. From P. Poeppigii Nees it differs by its glabrous leaves and less robust, more spreading inflorescences. P. parviflorum Ducke, another related species, has very much smaller flowers than P. nobile.

PLEUROTHYRIUM KRUKOVII A. C. Smith, sp. nov. Arbor ad 28 m. alta; ramulis teretibus fistulosis juventute cinereo-tomentellis mox glabris; petiolis rugosis nigrescentibus canaliculatis 15-30 mm. longis; laminis coriaceis glabris oblongis, 25-45 cm. longis, 7-12 cm. latis, basi acutis, apice acutis vel breviter acuminatis, margine integris, costa supra elevata subtus prominentissima, nervis secundariis utroque 14-16 rectis supra planis subtus prominentibus, venulis reticulatis supra obscuris subtus prominulis; inflorescentiis solitariis axillaribus quam foliis multo brevioribus (7-12 cm. longis) multifloris, ramulis (et bracteolis floribusque) minute cinereo-tomentellis, ramulis secundariis 10-16 gracilibus complanatis 4-10 mm. longis; floribus 3-6 in fasciculis, bracteolis 2 vel 3 spathulatis acutis 3-4 mm. longis mox deciduis subtentis; pedicellis maturitate 3-4 mm. longis; perianthii tubo obconico 1 mm. longo, lobis 6 oblongis obtusis, 2.5 mm. longis, 1.5 mm. latis; staminibus 9 fertilibus 1 mm. longis, antheris oblongis apice emarginatis, locellis plus minusve laterali-

bus, filamentis gracilibus antheras aequantibus, omnibus glandulis binis non confluentibus cinctis; ovario glabro globoso sub anthesi 1 mm. diametro, stylo arcte tomentello ovarium aequante, stigmate truncato.

Type, Krukoff 5563, collected Aug. 17, 1933, on "terra firma" near mouth of Rio Macauhan (tributary of Rio Yaco), basin of Rio Purus, Territory of Acre. Other collections from the same locality are Krukoff 5255 and 5722. It is related to P. parviflorum Ducke, from which it differs by the much larger leaves, the narrower inflorescences (of which P. parviflorum has secondary branches 12-15 mm. long), and the more numerous flowers.

ELAEocarPOEAE

Sloanea reticulata A. C. Smith - Territory of Acre: upper Rio Jurapary, basin of Rio Jurua, Krukoff 5230. This specimen agrees with the Maranhão plant described as S. reticulata in all details except size of inflorescence. The peduncles of the Acre plant are 4-6 cm. long, the pedicels 2-3 cm. long. Other floral and leaf characters mentioned in the description of S. reticulata distinguish the species from S. Garckeana Schum.

GUTTIFERAE

TOVOMITA KRUKOVII A. C. Smith, sp. nov. Frutex glaber 8 m. altus; ramulis teretibus cinereis; petiolis gracilibus canaliculatis 7-20 mm. longis; laminis subcoriaceis oblongis, 7-10 cm. longis, 2.5-4 cm. latis, basi attenuatis, apice acutis vel breviter acuminatis, margine integris et leviter recurvatis, costa utrinque prominente, nervis secundariis utroque 7-10 (nervis tertiariis interspersis) patulis cum venulis utrinque prominulis; inflorescentiis axillaribus pauciramosis compactis 1-1.5 cm. longis, ramulis gracilibus brevissimis bracteis 1-2 mm. longis subtentis; pedicellis 3-5 mm. longis, alabastris ♂ 3-4 mm. diametro; sepalis 4 tenuiter coriaceis ovato-oblongis, 4 mm. longis, 3 mm. latis, 2 interioribus angustioribus; petalis 4 oblongis obtusis papyraceis, 4 mm. longis, 1.5 mm. latis; staminibus circiter 30, 3-4 mm. longis, filamentis carnosius, antheris globosis obtusis 0.3 mm. longis.

Type, Krukoff 4887, collected in June, 1933, on "terra firma" near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. From its ally, T. Riedeliana Engl., the new species differs by its compact rather than ample terminal inflorescence, and by its smaller flowers. T. acuminata Engl., another related species, has broader conspicuously acuminate leaves and a more ample inflorescence than T. Krukovii.

TOVOMITA MICRANTHA A. C. Smith, sp. nov. Frutex glaber 5 m. altus; ramulis teretibus fuscis; petiolis crassis leviter canaliculatis 8-16 mm. longis; laminis coriaceis oblongo-ellipticis, 12-20 cm. longis, 6-12 cm. latis, basi acutis, apice acutis vel breviter acuminatis, margine integris, costa utrinque prominente, nervis secundariis utroque 10-15 patulis curvatis supra leviter impressis subtus elevatis, venulis reticulatis subtus saepe prominulis; inflorescentiis axillaribus pauciramosis 2-3 cm. longis, ramulis crassis, bracteis parvis caducis; pedicellis 4-5 mm. longis, alabastris ♂ albis subglobosis 3-4 mm. diametro; sepalis 4 coriaceis ovato-oblongis subacutis, 3-4 mm. longis, 2-3 mm. latis; petalis 4 (semper?) velut sepalis sed papyraceis mox deciduis; staminibus 25-30 circiter 3.5 mm. longis, filamentis carnosis, antheris acutis 0.5 mm. longis.

Type, Krukoff 5071, collected June 28, 1933, on "terra firma" near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. It is a species of the alliance of T. rubella Spruce and T. Spruceana Pl. & Tr., having broader leaves than either. In floral characters it more nearly resembles the former, which, however, has fewer lateral nerves. The new species resembles T. macrophylla (P. & E.) Walp. in foliage, but has a far less robust inflorescence and fewer petals.

LECYTHIDACEAE

LECYTHIS HIANIS A. C. Smith, sp. nov. Arbor glabra ad 30 m. alta; ramulis teretibus fuscis dense lenticellatis; petiolis gracilibus nigrescentibus 3-6 cm. longis anguste alatis; laminis chartaceis fuscescentibus oblongis, 7-10 cm. longis, 3-4 cm. latis, basi acutis vel obtusis, apice breviter acuminatis, margine serrulatis, costa utrinque conspicua, nervis secundariis utroque 9-12 rectis prope margines anastomosantibus, cum venulis reticulatis utrinque prominulis; paniculis axillaribus et terminalibus pauciramosis 5-12 cm. longis; rhachidibus rugosis conspicue lenticellatis, geniculis incrassatis; pedicellis subnullis vel ad 2 mm. longis; sepalis subaequalibus carnosis deltoideo-ovatis, 3 mm. longis, 4 mm. latis, apice rotundatis, margine membranaceis; petalis rotundato-oblongis, 15-17 mm. longis, 12-14 mm. latis; androphoro carnoso explanato 25-35 mm. longo, ligula prope basin 15-23 mm. lata distaliter contracta, galea 15-25 mm. diametro subtus dense echinata, appendiculis anantheris linearibus 6 mm. longis (prope margines plerumque staminiferis) oblecta, staminibus circa annulum numerosissimis, filamentis carnosis 0.8 mm. longis distaliter incrassatis, antheris subglobosis 0.4 mm. diametro; ovario subinfero, vertice plano, stylo carnoso 1 mm. longo, loculis 4, ovulis in quoque loculo 10-15 funiculis sustentis; pyx-

idio vestuto subgloboso rugoso, 14 cm. longo (sine operculo), 16 cm. lato, supra medium zona calycari rugosa cincto; vitta interzonalis suberecta 3-4 cm. longa; zona superiore integra, ore 11-13 cm. diametro; pericarpio tenui, 6-8 mm. crasso.

Type, Krukoff 4811, collected June 14, 1933, on "terra firma" near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. Another specimen, collected on "varzea" land in the same vicinity, is Krukoff 4630. Both specimens bear flowers, which are said to be "white and violet," and 4811 is accompanied by an old fruit, lacking operculum and seeds. It is apparently most closely related to L. usitata Miers, like which it is called "Sapucaya." The new species has uniformly smaller leaves and flowers; its fruit has a much thinner pericarp (in thickness 6-8 mm. instead of 11-18 mm. as in L. usitata) and is only slightly contracted at the mouth (diameter of mouth 11-13 cm. rather than 6-10 cm. as in L. usitata). L. paraensis Huber, a species not properly published, is not known to me.

ESCHWEILERA APICULATA (Miers) A. C. Smith, comb. nov.

Chytroma apiculata Miers, Trans. Linn. Soc. 30: 245. 1874. Maranhão: Maracassumé River region, Froes 1868. Our specimen is similar to type material; a local name is "Atiriba."

ESCHWEILERA RORIDA (Miers) A. C. Smith, comb. nov. Chytroma rorida Miers, Trans. Linn. Soc. 30: 243. 1874.

ESCHWEILERA (Eueschweilera) KRUKOVII A. C. Smith, sp. nov. Arbor glabra 25-35 m. alta, trunco circiter 1.5 m. diametro; ramis ramulisque cinereis teretibus lenticellatis; petioliis rugosis nigrescentibus 6-11 mm. longis; laminis coriaceis oblongis, 8-16 cm. longis, 2.5-6 cm. latis, basi acutis vel subtruncatis, apice breviter et obtuse acuminatis, margine integris vel obsolete serrulatis, costa crassa utrinque subprominente, nervis secundariis utroque 6-8 prope margines adscendentibus utrinque prominulis vel supra immersis, venulis copiose reticulatis subtus prominulis; paniculis axillaribus pauciramosis 2-8 cm. longis; rhachidibus juventute fusco-puberulis mox glabris; pedicellis rugosis 5-10 mm. longis; sepalis 6 subaequalibus ovatis obtusis, 2 mm. longis, 2-3 mm. latis, margine membranaceis; petalis tenuiter carnosius oblongo-ovatis, 16-18 mm. longis, 12-14 mm. latis, apice rotundatis; androphoro explanato 30 mm. longo, ligula tenuiter coriacea 8-10 mm. lata, galea 12-14 mm. diametro subtus dense echinata appendiculis anantheris linearibus 4-5 mm. longis oblecta; staminibus circiter 150 circa annulum et ligulae basi, filamentis carnosius 1-1.5 mm. longis, antheris subglobosis 0.5 mm. diametro; ovario subinfero,

vertice plano, stylo carnosio subconico 2 mm. longo prope basin 1 mm. diametro, stigmatibus truncato, loculis 2, ovulis in quoque loculo 4 vel 5 e basi sessilibus.

Type, Krukoff 4847, collected June 15, 1933, on "varzea" land near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, State of Amazonas. Another collection from the same locality is Krukoff 4739. It is a species resembling E. florida (Miers) A. C. Smith, from which it differs by its 2- rather than 4-celled ovary, its pedicelled rather than subsessile flowers, and its narrower leaves. The number of cells in the ovary (the distinguishing feature of the Sections Eueschweilera and Chytroma) is considered of secondary importance by Eyma (a), since by this means closely related species have been too far separated.

ESCHWEILERA OBTECTA (Miers) A. C. Smith, comb. nov.

Jugastrum obtectum Miers, Trans. Linn. Soc. 30: 276. 1874. Krukoff 1293 (Madeira River region, State of Amazonas) has a fruit resembling that portrayed by Miers, although I have not compared the foliage with type material.

Gouratari macrosperma A. C. Smith, formerly known from the upper Machado River region, State of Matto Grosso, is also represented by Krukoff 5638 and 5687, both collected near the mouth of the Rio Macauhan (tributary of Rio Yaco), Territory of Acre. Both specimens are taken from trees nearly 60 meters high. 5638 bears fruits similar to those of the type, but with seeds slightly different in proportion (about 10 by 3 cm.). 5687 bears inflorescences, which are here described:

Racemis axillaribus et terminalibus, 10-20 cm. longis, ut videtur simplicibus; rachide crassa arcte fusco-stellato-pubescente 15-20-flora; pedicellis crassis dense pubescentibus, 5-8 mm. longis, infra medium articulatis et minute 3-bracteolatis; sepalis 6 imbricatis oblongo-rotundatis obtusis, ad 8 mm. longis et latis, extra pubescentibus, margine breviter ciliatis; petalis 6 albis obovatis extra puberulis, circiter 20 mm. longis et latis; androphoro explanato 30 mm. longo, ligula 10 mm. lata, galea 15-20 mm. diametro subtus densissime echinata; staminibus circa annulum numerosis, filamentis gracilibus 1 mm. longis, antheris oblongis 1 mm. longis; ovario turbinato pubescente subinfero, vertice plano, stylo crasso subtruncato.

Gouratari pulchra Sandwith - Amazonas: near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, Krukoff 5086. Our specimen agrees precisely in vegetative characters with the type collection of the Guiana species, and I note this extension of range with some confidence. The

fruits of 5086 agree with those described from Surinam by Eyma (b).

Cariniana domestica (Mart.) Miers appears to be represented by Krukoff 5597, collected near mouth of Rio Macaúhan (tributary of Rio Yaco), basin of Rio Purus, Territory of Acre. Our plant, in foliage and fruit, resembles the descriptions and plates. Mr. Krukoff notes it as a buttressed tree nearly 60 meters high.

Cariniana micrantha Ducke - Amazonas: near mouth of Rio Embira (tributary of Rio Tarauaca), basin of Rio Jurua, Krukoff 5095. A strongly buttressed tree nearly 60 meters high, equalled in the Jurua region only by a species of Swietenia. The wood of the two species is occasionally sold in mixture.

(a) Meded. Bot. Mus. en Herb. Rijks Univ. Utrecht 4: 59. 1932.

(b) l. c. 57.

STUDIES OF SOUTH AMERICAN PLANTS - IV

New Monimiaceae, Trigoniaceae, and Vacciniaceae

A. C. Smith

In the accompanying paper specimens from several herbaria are cited. These institutions are indicated by the following abbreviations: Arnold Arboretum (A); British Museum (BM); Gray Herbarium (G); Royal Botanic Gardens, Kew (K); Jardin Botánico, Madrid (M); U. S. National Museum (N); New York Botanical Garden (Y).

MONIMIAOEAE

SIPARUNA HEMISPHERICA A. C. Smith, sp. nov. Frutex dioecus (vel arbor parva?); ramulis elongatis subteretibus fuscis glabris; petiolis oppositis vel suboppositis semi-teretibus rugosis nigrescentibus glabris 7-20 mm. longis; laminis fuscescentibus oblongis, 13-19 cm. longis, 4-5.5 cm. latis, basi acutis, apice subacuminatis, margine subintegris et anguste revolutis, utrinque glabris, pinnatinerviis, costa supra plana subtus prominente, nervis lateralibus 8-11 in quoque latere arcuato-ascendentibus prope margines anastomosantibus, utrinque leviter elevatis, venulis reticulatis leviter elevatis; inflorescentiis ♂ axillaribus plerumque

binis 2-3.5 cm. longis 6-12-floris; pedunculo 1.5-2.5 cm. longo gracillimo nigrescente glabro (vel minute puberulo); floribus nigrescentibus ubique glabris (juventute parce puberulis); pedicellis 2-5 mm. longis; receptaculo cupuliformi sub anthesi 2 mm. diametro; tepalis 5 patulis carnosis oblongis rotundatis circiter 1 mm. longis et latis; velo carnosio plano circiter 0.7 mm. lato, ore minuto; staminibus 4 vel 5 carnosis oblongis subacutis, 1-1.2 mm. longis, 0.7-1 mm. latis, dorsaliter minute luteo-glandulosis, antheris filamenta subaequantibus, per poros ovaes contiguos 0.3 mm. longos dehiscentibus; inflorescentiis ♀ desideratis.

Type, Mutis 1843, collected in Colombia and deposited in the herbarium of the Jardin Botánico, Madrid. It is a species very similar in general appearance to S. Archeri A. C. Smith, from which it differs by its totally glabrous habit, its longer ♂ inflorescence, its slightly larger flowers with spreading tepals, and its reduced number of stamens. The relationship of the new species to S. nicaraguensis Hemsl. should also be noted, but the Central American plant has a slightly puberulous habit, shorter inflorescences, and differently shaped leaves than S. hemisphaerica. The specific name refers to the shape of the receptacle.

SIPARUNA EPISCIAEFOLIA A. C. Smith, sp. nov. Frutex dioecus; ramulis subteretibus fuscis parce pilosis (pilis hispidis plerumque simplicibus); foliis alternis, petiolis subteretibus rugosis fuscis parce hispidis 7-17 mm. longis, laminis fuscis papyraceis oblongis, 10-12 cm. longis, 3-3.5 cm. latis, basi acutis vel anguste obtusis, apice acutis, margine crassis et crenatis vel calloso-denticulatis, utrinque praecipue ad nervos pilos plerumque simplices 0.4-0.6 mm. longos gerentibus, pinnatinerviis, nervis secundariis utroque 11-14 arcuato-adscendentibus prope margines anastomosantibus, cum costa supra subplanis subtus leviter elevatis, venulis subtus prominulis; inflorescentiis ♂ axillariibus saepe binis 1-2 cm. longis; pedunculo subglabro flexuoso ad 1.5 cm. longo; floribus nigrescentibus extra parce fuscohispidulis (pilis ad 0.3 mm. longis), 2-3 mm. diametro; pedicellis 1-3 mm. longis; receptaculo obconico sub anthesi 1.5 mm. diametro; tepalis 5 (vel 4) carnosis patulis saepe recurvatis oblongis obtusis maturitate 0.7-1 mm. longis et latis; velo tenuiter carnosio vel submembranaceo conico-elevato circiter 0.5 mm. lato, extra saepe luteo-glanduloso, ore 1 mm. diametro; staminibus plerumque 3 carnosis oblongis obtusis, 1.3-1.7 mm. longis, 0.7 mm. latis, dorsaliter parce luteo-glandulosis, antheris quam filamentis paullo brevioribus, per poros ovaes contiguos 0.4 mm. longos dehiscentibus; inflorescentiis ♀ desideratis.

Type, Mutis 1901, collected in Colombia and deposited in

the U. S. National Herbarium (no. 1,560,008). Duplicate at M. It is a species related to the Peruvian S. hispida A. DC., from which it differs by the less dense and less hispid pubescence and the narrower leaves. Flowers of the new species consistently have 3 stamens, a number which is conspicuously low for the genus. As ♂ flowers of S. hispida are not known, the plants cannot be compared in regard to staminal characters.

SIPARUNA METENSIS A. C. Smith, sp. nov. Frutex dioecus; ramulis teretibus hispido-pilosis (pilis simplicibus vel e basi 2-3-fidis 0.5-1 mm. longis); petiolis suboppositis teretibus 5-8 mm. longis velut ramulis pilosis; laminis papyraceis obovato-oblongis, 12-17 cm. longis, 5-7 cm. latis, basi obtusis, apice subito acuminatis, margine crenatis vel apiculato-dentatis (dentibus plus minuse callosis 3-5 per centimetrum), utrinque pilis 1-3-fidis pilosis, pilis secus nervos principales densioribus, nervis secundariis utroque 9-12 arcuato-ascendentibus, cum costa supra prominulis subtus elevatis, venulis utrinque planis vel prominulis; inflorescentiis ♂ et ♀ cymosis, cymis in foliorum axillis 2-4 paucifloris 12-30 mm. longis, cum floribus parce hispidis (pilis e basi 1-3-fidis 0.3 mm. longis); pedicellis circiter 3 mm. longis; floribus ♂ maturitate 3 mm. diametro; receptaculis subglobosis limbo angusto obtuse 5-gono (e tepalis connatis constante) circumdatis; velo leviter elevato, ore minuto; staminibus 4, antheris minutis, filamentis dilatatis minute luteo-glandulosis 1.5 mm. longis et latis apice contractis; floribus ♀ velut ♂, stylis circiter 15 leviter exsertis leviter cohaerentibus sed non connatis; drupis juvenilibus obconicis pilosis 6 mm. diametro.

Type, Brother Apollinaire, collected in Dec., 1929, at Villavicencio, Intendencia Meta, Colombia, and deposited in the herbarium of the New York Botanical Garden. Duplicate at N. The type collection bears ♂ flowers. Another collection from the same locality, bearing ♀ flowers, is Brother Nicéforo Maria (Jan., 1927)(N, Y). It is a species related to the preceding, from which it differs by its shorter petioles, larger leaves, and its minute tepals and anthers.

TRIGONIAEAE

TRIGONIA MEMBRANACEA A. C. Smith, sp. nov. Arbor parva; ramis violaceis teretibus glabris lenticellatis; ramulis fuscis striatis cinereo-puberulis mox glabrescentibus; petiolis gracilibus 3-4 mm. longis decidue puberulis; laminis membranaceis viridibus glabris (subtus costa et axillis nervorum interdum puberulis) ovato-oblongis, 5-7 cm. longis, 2-2.5 cm. latis, basi obtusis vel rotundatis, apice cuspidatis saepe calloso-mucronatis, margine integris, nervis secund-

ariis plerumque 4 utroque arcuato-adscedentibus anastomosantibus, cum costa utrinque leviter elevatis subtus pallidis; inflorescentiis ut videtur terminalibus 4-6 cm. longis, rhachidibus puberulis; capsulis breviter pedicellatis fuscis glabris subrugosis ovoideo-trilobatis, 18-20 mm. longis, circiter 10 mm. latis, valvis concavis intus flavescenscentibus apice bifidis, marginibus introflexis; seminibus 1.5 mm. longis, lana lutescente 10 mm. longa circumvestitis.

Type, Killip & Smith 14396, collected Nov. 11, 1926, in woods at Torrecilla, near Turbaco, Department of Bolivar, Colombia, alt. 150-300 m., and deposited in the herbarium of the New York Botanical Garden. Duplicates at A, G, N. It is distinguishable from other species of the genus by the size, shape, texture, and venation of its leaves. Its relationship is probably with the Guiana species *T. microcarpa* Sagot and *T. laevis* Aubl., than both of which its leaves are more delicate in texture and with fewer lateral veins, and its inflorescences probably shorter.

TRIGONIA CRASSIFLORA A. C. Smith, sp. nov. Arbor parva; ramulis subteretibus striatis fuscis, pilis ferrugineis circiter 0.5 mm. longis obtectis, demum glabrescentibus et lenticellatis; stipulis interpetiolaribus (mox deciduis) subcoriaceis puberulis oblongo-lanceolatis, circiter 10 mm. longis et 3 mm. latis, apice obtusis; petiolis leviter canaliculatis basi incrassatis, 3-4 mm. longis, decidue strigosis; laminis papyraceis concoloribus oblongis, 12-17 cm. longis, 5-9 cm. latis, basi subcordatis, apice breviter acuminatis, margine integris et leviter undulatis, supra parce papillosis et scabridulis, utrinque glabris (subtus nervis principalibus interdum strigosis), costa subtus prominente fusca, nervis secundariis utroque 7 vel 8 arcuato-adscedentibus superne anastomosantibus utrinque elevatis, venulis copiose reticulatis utrinque prominulis; inflorescentiis terminalibus anguste paniculatis densifloris, ad 12 cm. longis et 3 cm. latis, rhachidibus ramisque crassis densissime ferrugineo-tomentosis (pilis ad 0.8 mm. longis); floribus in ramis secundariis brevibus subsessilibus, bracteis ovatis subtentis (bracteis acutis, ad 6 mm. longis et 4 mm. latis, extra ferrugineo-sericeis intus pallido-puberulis); calycis lobis oblongo-ovatis 6-7 mm. longis, extra ferrugineo- vel cano-tomentulosus intus glabris; petalis membranaceis glabris inaequalibus; petalo postico 7 mm. longo, inferne in gibberem 4 mm. longum excavato, ad faucem sacculi breviter ferrugineo-piloso, superne plano rotundato, margine undulato; petalis lateralibus obovato-spathulatis planis, 7 mm. longis, 4 mm. latis, apice rotundatis; petalis anticis obovatis, circiter 5 mm. longis et 3 mm. latis, medio intus carinatis; staminibus fertilibus 8 glabris, 3-4

mm. longis, filamentis prope ad apices connatis, antheris ovoideis 1 mm. longis; glandulis 2 castaneis ad 2 mm. longis; ovario ovoideo, pilis stramineis ad 1 mm. longis dense hispido; stylo 3 mm. longo superne incrassato; stigmatibus albis discoideo 1 mm. diametro, medio depresso.

Type, R. A. Toro 1115, collected June 20, 1928, at Puerto Berrio, Department of Antioquia, Colombia, and deposited in the herbarium of the New York Botanical Garden. It is a very distinct species on the basis of its large flowers and bracts, its robust inflorescence, and its concolored glabrous subcordate-based leaves. The Peruvian *T. virens* Macbr. seems to be its closest ally, but has pedicellate flowers and a different type of inflorescence pubescence, as well as being less robust throughout.

VAOCINIACEAE

CERATOSTEMA RIMBACHII A. C. Smith, sp. nov. Frutex parvus; ramulis cinereis subteretibus glabris, petiolorum basi-
bus incrassatis; stipulis minutis (1 mm. longis) mox deciduis; petiolis subnullis (ad 1 mm. longis); laminis coriaceis glabris oblongis vel obovato-oblongis, 12-18 mm. longis, 5-8 mm. latis, basi rotundatis vel late cuneatis, apice obtusis, margine integris incrassatis, costa utrinque prominula, nervis secundariis 2 vel 4 e costa prope basin orientibus sed obscuris; floribus axillaribus solitariis glabris, bracteis minutis 1 vel 2 subtentis; pedicello rugoso 1 mm. longo decidue minute glanduloso-piloso, cum calyce articulado; calycis tubo obconico sub anthesi 1.5-2 mm. longo, limbo subrecto papyraceo lobis inclusis 2 mm. longo, lobis deltoideis, 1.5 mm. longis; corolla subcarnosa subcylindrica 10-12 mm. longa, 3 mm. diametro, lobis oblongis obtusis 1-2 mm. longis; staminibus 7-10 quam corolla paullo brevioribus; filamentis nigrescentibus glabris 1-2 mm. longis; antheris 7-8 mm. longis, tubulis flexilibus quam loculis 2-3-plo longioribus; stylo corollam aequante, stigmatibus subcapitato.

Type, Rimbach 188, collected in February, 1934, on the eastern slope of Mt. Tunguragua, Province of Tunguragua, Ecuador, and deposited in the herbarium of the Field Museum (no. 740,295). Duplicate at Y. It is a species allied to *C. coronarium* Linden, from which it differs by its subsessile flowers, differently shaped leaves, and its glabrous and less compact habit. The reduced number of stamens is unusual in the genus. *C. Rimbachii* bears a resemblance to certain species of *Disterigma*, but the lack of large pedicellary bracts, the presence of intrapetiolar stipules, and the branchlets, which are swollen at the base of each petiole, indicate the place of the new species in *Ceratostema*.

CERATOSTEMA COLOMBIANUM A. C. Smith, sp. nov. Frutex;

petiolis rugosis 2 mm. longis juventute puberulis; laminis oblongis vel ovato-oblongis, 20-35 mm. longis, 9-15 mm. latis, basi cordatis, apice rotundatis vel obtusis, subtus pilosis glabrescentibus, obscure 5-nerviis; inflorescentiis 2-5-floris; pedicellis 5-8 mm. longis pilosis, cum calyce articulatis; calycis tubo 3-4 mm. longo, limbo 3 mm. longo, lobis deltoideis 2 mm. longis; corolla circiter 15 mm. longa et 6 mm. diametro pilosa; staminibus alternatim leviter inaequalibus, filamentis basi subconnatis, antheris 9.5-10 mm. longis, tubulis quam loculis 2-3-plo longioribus rimis dehiscentibus.

Type, Ariste Joseph B.112, collected on the eastern páramos of Guasca, towards Gacheta, Department of Cundinamarca, Colombia, and deposited in the U. S. National Herbarium. The following specimens from Cundinamarca also represent the species: near Bogotá, Triana 2688 (BM); Guasca, E. Perez Arbolaez 1178 (K, N). In my recent monograph (a) the Ariste Joseph specimen was erroneously referred to Ceratostema parvifolium Benth., which name was properly referred, elsewhere in the same paper, to Thibaudia parvifolia (Benth.) Hoer. My description of C. parvifolium (a) was based entirely upon Ariste Joseph's specimen; therefore that complete description may be taken to augment the above.

CAVENDISHIA NITIDA (HBK.) A. C. Smith, comb. nov. Thibaudia nitida HBK. Nov. Gen. & Sp. 3: 271. 1818. Psammisia nitida Kl. Linnaea 24: 45. 1851. Macleania nitida Hoer. Bot. Jahrb. Engl. 42: 269. 1909. Cavendishia obtusa A. C. Smith, Contr. U. S. Nat. Herb. 28: 498, pl. 16. 1932. A specimen collected in Tolima by Humboldt and Bonpland, deposited in the Botanisches Museum at Berlin, is erroneously indicated as the type of Thibaudia nitida, and was accepted as that species both by Hoerold and the present writer. However, the actual type of Thibaudia nitida, to which the description more accurately applies, is deposited in the herbarium of the Jardin des Plantes, Paris. Consequently the above new combination is necessary. The specimens cited in my recent monograph as Cavendishia obtusa should be referred to C. nitida.

MACLEANIA RUPESTRIS (HBK.) A. C. Smith, comb. nov. Thibaudia rupestris HBK. Nov. Gen. & Sp. 3: 270. 1818. Psammisia rupestris Kl. Linnaea 24: 45. 1851. Other synonyms cited in my recent monograph (b). The use of the name Thibaudia nitida for a species of Cavendishia, as already noted, makes necessary the above new combination for the common Andean species of Macleania, although I regret the necessity of discarding Hoerold's name M. nitida for this well-known species. The specimens cited by me as M. nitida should be

referred to M. rupestris. The type collection may be seen at both Paris and Berlin.

MACLEANIA MOLLIS A. C. Smith, sp. nov. Frutex; ramulis angulatis pilis pallidis ad 1 mm. longis dense vestitis; petiolis rugosis pilosis 2-3 mm. longis; laminis coriaceis late ovatis, 4-5 cm. longis, 2.5-3.3 cm. latis, basi cordatis, apice obtusis, margine integris et leviter revolutis, supra juventute pilosis mox glabris, subtus praecipue ad nervos molliter albo-pilosis, 5- vel 7-ply-nerviis, nervis supra impressis subtus prominentibus, venulis reticulatis; inflorescentiis axillaribus fasciculatis 1-3-floris bracteis minutis subtentis; floribus ubique pilos albos circiter 0.4 mm. longos gerentibus; pedicellis 1-3 mm. longis; calycis tubo obconico vel obscure 5-angulato, circiter 3 mm. longo et diametro, limbo erecto-patente lobis inclusis 3 mm. longo, lobis 5 deltoideis apiculatis, 1.5 mm. longis, 3 mm. latis; corolla urceolata, 18 mm. longa, prope basin 5 mm. diametro, lobis parvis; staminibus 10 aequalibus, 11 mm. longis; filamentis glabris nigrescentibus 3 mm. longis; antheris circiter 9 mm. longis, tubulis 2 angustis basi lateraliter connatis loculos aequantibus, rimis longis dehiscentibus; stylo corollam aequante.

Type, Rimbach 119, collected in 1932 near Riobamba, Province of Chimborazo, Ecuador, and deposited in the herbarium of the New York Botanical Garden. It is related to M. hirtiflora (Benth.) A. C. Smith, from which it differs by its pli-nerved rather than pinnate venation, the more pronounced pubescence of all its parts, its fasciculate inflorescence, and its short pedicels.

(a) Contr. U. S. Nat. Herb. 28: 346. 1932.

(b) l. c. 376.

H. A. Gleason

TIBOUCHINA ERYTHROPHYLLA Gl. sp. nov. § *Pseudopterolepis*: caules diffusi prostrati ramosi gracillimi, juventute acute 4-angulati, demum subteretes, ad angulos sparse pubescentes pilis curvato-adscendentibus fere 1 mm. longis, nodis saepe setosis, internodiis ramorum brevissimis; petioli 2--3 mm. longi; laminae firmae ovatae, saepe circ. 8 mm. longae et 4 mm. latae, maximae 11 mm. longae 6 mm. latae, acutae vel subacuminatae, integrae, basi late cuneatae, 5-plex-nerviae, subtus glabrae rubrae, supra dense albo-villosulae, venae et venulae obsoletae; flores 4-meri pauci solitarii ramos laterales terminantes; pedicelli 1 cm. longi; hypanthium obconicum 3.8 mm. longum angustissime 4-alatum, costis intermediis 4 obscuris, inter alas glabrum et ad alas tenuiter pubescens pilis adscendentibus 0.3 mm. longis; sepala suberecta triangulari-ovata 1.6 mm. longa 1.3 mm. lata 1-nervia dense ciliata, seta terminali rigida 2 mm. longa, setis basalibus et intersepalinis paucis, 0.2--1 mm. longis; petala non visa; stamina isomorphia sed inaequalia; filamenta glabra, 1.8 vel 1.5 mm. longa; antherae fere rectae lineares 3.3 vel 2.2 mm. longae; connectiva 0.8 vel 0.6 mm. longa lobis basalibus minutis rotundatis; ovarium liberum ellipsoideum 4-loculare 3 mm. longum summo setosum; stylus rectus glaber 7 mm. longus stigmate punctiformi.

Type, Standley & Valerio 49048, collected at Yerba Buena, northeast of San Isidro, Prov. de Heredia, Costa Rica, alt. about 2000 m., deposited in the United States National Herbarium (1305867). Standley & Valerio 50110, of the same locality and date, is identical. *Tibouchina erythrophylla* is one of a small group of Central American species of which *T. Oerstedii* (Triana) Cogn. is best known. It differs from the other two species of the group in its very small flowers and its leaves red and glabrous beneath. It is further differentiated from *T. Oerstedii* by its short and broad sepals.

Tibouchina nana (Standley) Gl. comb. nov.

Chaetolepis nana Standley, Field Mus. Pub. Bot. 4: 247. 1929
Tibouchina Oerstedii var. subsessiliflora Cogn. Monogr. Phan. 7: 269. 1891.

The types specimens of the two synonyms are identical. It is easily distinguished from the related *T. Oerstedii* by the short sepals and dimorphic hairs on the leaves. Both are separated from *T. erythrophylla*, described above, by their pubescent foliage.

TIBOUCHINA OLIGANTHA Gl. sp. nov. § Diotanthera: frutex; rami superiores gracillimi juventute complanati, sparsissime strigosi, pilis 0.3 mm. longis; petioli graciles 8--15 mm. longi minute sed quam rami densius strigillosi; laminae late ovato-oblongae vel ellipticae usque ad 60 mm. longae 40 mm. latae (superiores minores), abrupte et breviter acuminatae, margine ciliato-serrulatae, inferne late rotundatae ad basin imam acutata, 5-7-nerviae, supra scaberulae, pilis adpressis ad dimidium adnatis, parte libera circiter 0.5 mm. longa, subtus ad venas primarias sparse strigosae pilis 0.4 mm. longis, ad paginam glabrae; venae primariae supra fere planae, jugis intermediis brevissime connatis, subtus elevatae; venae secundariae obscurae flexuosae; inflorescentia terminalis trichotoma pauciflora fere glabra; cymulae 3-flo-rae et in quaque cymula flores laterales bracteis 2 caducis late rotundatis 3 mm. longis membranaceis ciliatis involu-crati; flores 5-meri; hypanthium campanulatum 5 mm. longum scabro-strigosum pilis subulatis albidis ca. 0.8 mm. longis; sepala oblonga, dense ciliata, 5 mm. longa basi 1.8 mm. la-ta, ciliis arcuato-ascendentibus 0.5 mm. longis, in linea centrali sicut hypanthium strigosa; petala cuneato-obovata 14 mm. longa 8.5 mm. lata superne glanduloso-ciliata, ut vi-detur flava; filamenta glabra; antherae subulatae, 6 vel 4 mm. longae, connectivis 2.4 vel 1.2 mm. longis basi in lobos 2 rotundatos dilatatis; stylus glaber 12 mm. longus.

Type, Steinbach 8262, collected at Samaipata, Dept. Santa Cruz, Bolivia, alt. 2200 m., and deposited at the New York Botanical Garden. Under the artificial arrangement of the species in Cogniaux' Monograph, T. oligantha may be placed next to T. latifolia (Naud.) Britt. The latter differs from ours in its narrower leaves and much smaller and more numer-ous flowers.

TIBOUCHINA VENOSA Gl. sp. nov. § Diotanthera: frutex; rami minores tenuissime et adpresse pubescentes mox glabrati obscure 4-angulati, internodiis majoribus usque ad 6 cm. longis; petioli 5--10 mm. longi, sparse adpresseque setosi; laminae foliorum lanceolatae, maximae quae suppetunt 50 mm. longae 17 mm. latae in ramulis lateralibus, verisimiliter in ramis usque ad 100 mm. longae et certe 35 mm. latae, acuminatae, integrae vel minutissime serrulatae, tenuiter ciliatae setis 0.3 mm. longis, basi acutae saepe paullo inaequilater-ae, 7-phi-nerviae, jugo exteriori foliorum minorum saepe marginali, supra pubescentes pilis ascendentibus gracilibus 0.3--0.5 mm. longis basi vix adnatis, subtus in pagina glabrae ad venas venulasque tenuissime minutissime adpresso-setosae pilis 0.1--0.3 mm. longis; costae supra impressae sub-tus elevatae, venae secundariae supra obsoletae subtus ob-scurae planae flexuosae. Cymae-pauciflorae axillares et ter-

minales in ramulis lateralibus paniculas parvas formantes, ultra internodia saepe et in pedicellis semper sparse glanduloso-pilosae; bracteae caducae sessiles rotundatae 6 mm. longae; flores 5-meri; hypanthium late campanulatum vel subhemisphaericum, 3.7 mm. longum, sparse glanduloso-setosum, pilis 0.6 mm. longis arcuato-ascendentibus; sepala anguste oblongo-triangularia 2.7 mm. longa ciliata, sinibus rotundatis; petala obovata circiter 12 mm. longa (flava?); filamenta glabra 6 vel 5 mm. longa; antherae subulatae leviter arcuatae 5.5 vel 4 mm. longae, connectivis subteretibus 2 vel 1 mm. longis infra insertionem filamenti in lobos 2 rotundatos dilatatis.

Type, Steinbach 8509, collected at Comarapa, Dept. Santa Cruz, Bolivia, alt. 2500 m., and deposited in the Gray Herbarium. T. venosa is apparently most nearly related to T. citrina (Naud.) Cogn., in which the leaves are notably wider and more sharply acuminate and the flowers less than half as large.

TIBOUCHINA SAXOSA Gl. sp. nov. § Pseudopterolepis; frutex ramis superioribus gracilibus elongatis rectis castaneis subteretibus, juventute dense adpresso-pilosis, demum glabrescentibus, cortice longitudinaliter fisso; internodiis majoribus 4--8 cm. longis, in ramis floriferis multo brevioribus; petioli dense adpresse setosi usque ad 1 cm. longi; laminae foliorum oblongo-lanceolatae usque ad 45 mm. longae 17 mm. latae acuminatae integrae basi acutae vel fere obtusae, 5-nerviae, supra dense pilosae, pilis subadpressis, basi vix adnatis, usque ad 1 mm. longis, gracillimis, a venis primariis arcuato-ascendentibus et inter venas convergentibus, subtus pallidiores ad venas densissime strigosae, pilis fere 2 mm. longis, et ad paginam molliter pubescentes, pilis erectis 1 mm. longis; venae primariae supra valde impressae laterales 4--7 mm. ultra basin confluentes; rami superiores foliosi 3--10 cm. longi valde divergentes ex axillis omnibus, foliolis valde reductis; cymae axillares et terminales pauciflorae, pedunculis et pedicellis adpresso-setosis; flores 4-meri; hypanthium campanulatum 3.5 mm. longum sparse strigoso-setosum; calycis tubus 0.3 mm. longus, lobi ascendentes 1.3 mm. longi supra basin late triangularem subulati; petala obovata valde inequilatera purpurea superne ciliata, 7 mm. longa; antherae subulatae, 4.3 vel 3.3 mm. longae, connectivis 1.2 vel 0.6 mm. longis, ad faciem anteriorem canaliculatis, basi in lobos 2 rotundatos vix dilatatis; ovarium 4-loculare superne molliter albo-pilosum.

Type, Pennell 13992, collected in rocky forest at Pilla-huata, Cerro de Cusilluyoc, Dept. Cusco, Peru, alt. 2200--2400 m., in the Gray Herbarium. Tibouchina saxosa appears to have no related species in the section Pseudopterolepis

with which it may be compared. Superficially it resembles T. asperifolia Cogn., a Peruvian plant with 5-merous flowers.

TIBOUCHINA BRACHYPHYLLA Gl. sp. nov. § Diotanthera: rami juveniles angulati sparse setoso-hispidi, pilis 1-2 mm. longis, demum glabrescentes subteretes; petioli fere glabri in ramis sterilibus 2--4 mm., in ramulis floriferis 1--2 mm. longi; laminae variae, ovato-lanceolatae, ovatae, vel late ovatae, in ramis sterilibus usque ad 25 mm. longae 14 mm. latae, in ramulis floriferis saepissime 8-10 mm. longae 5-6 mm. latae, obtusae vel acutae, 3-(vel interdum in majoribus 5-)nerviae, supra (minores) glabrae, sparse ad apicem setulosae, vel (maiores) in zonis 4 longitudinalibus setosae, subtus glabrae vel ad costas sparsissime setulosae; flores 5-meri, verisimiliter ebracteati, in cymulis 1--5-floris ad ramulos axillaribus et terminalibus, pedicellis 1--3 mm. longis; hypanthium subglobosum 3 mm. longum glabrum vel parcissime strigillosum, pilis 0.1--0.3 mm. longis; calycis tubus membranaceus 0.3 mm. longus in medio sinorum late truncatorum setas 2 conico-subulatas 0.4 mm. longas patulas vel subreflexas gerens; sepala patula anguste triangularia 3 mm. longa ciliata, ad apicem acutam breviter setosa caeterum glabra; petala obovata glabra 9 mm. longa; filamenta glabra 4.6 vel 3.6 mm. longa; antherae subulatae vix arcuatae 4.1 vel 3.2 mm. longae; connectivum in ser. ext. 1 mm. longum leviter curvatum basi in lobos 2 dilatatum, in ser. int. simile sed vix productum 0.5 mm. longum; ovarium 5-loculare setis 10 subulatis 0.4 mm. longis coronatum; stylus 7 mm. longus.

Type, Steinbach 8332, collected in forest at Comarapa, Dept. Santa Cruz, Bolivia, alt. 2500--3000 m., and deposited at the New York Botanical Garden. A sheet of the same number in the Gray Herbarium is identical and also exhibits sterile lower branches with larger leaves, as described above. Tibouchina brachyphylla has much smaller leaves than any other Andean species known to me.

Rhynchanthera paludicola (Donn.Sm.) Gl. comb. nov.
Tibouchina paludicola Donn. Sm., Bot. Gaz. 42: 293. 1906.

Torresia cearensis Allemao. This leguminous tree, originally described in an obscure publication about seventy years ago, is briefly discussed in the supplements to the Natürlichen Pflanzenfamilien. It is stated to have winged pods and seeds, but little information about their structure has been available. Krukoff's 5495, recently collected in the Acre Territory, is certainly of this genus and apparently conspecific. It consists only of opened pods, seeds, and detached leaflets.

Neither pods nor seeds were adequately described in the Pflanzenfamilien. In our plant the pods are dark brown, linear-oblong, 4.5--7 cm. long, rounded at both ends, glabrous, and strongly flattened except over the single seed, where they are somewhat swollen. The seed is about 5 mm. shorter than the pod, solitary and basal. It consists of a basal wing, with a linear hilum across the end, and an apical kernel. The kernel is dark gray, 10 mm. long, flattened-ellipsoid, thinly tomentose, and exhales a strong odor of cumarin when opened. The wing conforms to the dimensions of the pod and is generally very thin and almost translucent, but it is slightly thicker and opaque over the vascular supply near one margin. It apparently represents an expansion of the funiculus, comparable to the arilloid structures in many other genera of legumes.

The leaflets of our specimen are linear-oblong, 5--10 cm. long, 1--2 cm. wide, acuminate, rounded at base, glabrous, on petiolules 2 mm. long, and with secondary veins obsolete.

According to Mr. Krukoff, the native name in the Acre Territory is Cumaru de Cheiro, referring to the odor of the wood, that of the true tonka bean being odorless.

ALSEIS LATIFOLIA Gl. sp. nov. Arbor 8 m. alta ramis teretibus novellis ferrugineo-pubescentibus mox glabrescentibus; folia ad apicem ramorum dense conferta internodiis circiter 1 mm. longis; petioli 15--25 mm. longi ferrugineo-pubescentes; laminae firme chartaceae obovatae vel oblanceolatae 8--12 cm. longae 2.5--6 cm. latae acutae vel obtusae nec acuminatae basi subito contractae et secus petiolum breviter decurrentes, supra ad paginam breviter scabro-pubescentes ad costam densius pilosae, subtus dense pubescentes praecipue venas venulasque; spicae complures terminales at ex axillis superioribus paniculam laxam formantes, fructiferae 8--11 cm. longae; capsulae sessiles confertae anguste clavatae 8--9 mm. longae ferrugineo-pubescentes; semina linearia alata.

Type, Krukoff 2043, collected on terra firma near Coroa-sinho, State of Maranhao, and deposited at the New York Botanical Garden. While apparently most nearly related to *A. floribunda*, it is amply differentiated from that and other species by the broad leaves with broad bases and distinctly pubescent beneath and by the short and slender hairy capsule.

TAXONOMIC NOTES ON AMERICAN PHANEROGAMS -- II

Lyman B. Smith

LOZANIA BIPINNATA, spec. nov., arbor, 5-8 m. alta: ramulis gracilibus, subglabris: petiolo foliorum ad 1 cm. longo, sparse puberulis, lamina oblonga, integerrima, breviter acuminata, coriacea, 14 cm. longa, 5 cm. lata: inflorescentiis 1-3 in axillis foliorum, laxe bipinnatis, ad 8 cm. longis, dense adpresseque puberulis; ramulis perabbreviatis, paucifloris, haud ultra 2 mm. longis, bracteis imbricatis omnino obtectis: floribus cum pedicellis 2 mm. longis, viridibus; sepalis latissime ellipticis, obtusis, 0.8 mm. longis; stamini ovarium aequanti; ovario globoso, uniloculare, appresse puberulis, ovulo 1. Fig. 14.

Colombia: Dept. Boyaca: high thick forest, El Umbo region, northwest of Bogota, alt. 1500 m., Oct. 1932, A. E. Lawrence 524.

LOZANIA PEDICELLATA (Standl.) L. B. Smith, comb. nov. Lacistema pedicellatum Standl. in Journ. Wash. Acad. Sci. xvii. 8 (1927).

LOZANIA PITTIERI (Blake) L. B. Smith, comb. nov. Lacistema pittieri Blake in Contrib. U. S. Nat. Herb. xx. 520 (1924).

All three of the above species confirm the characters given by Mansfield when he retracted the genus Lozania in Notizblatt, xi. 592 (1932). The following key distinguishes the five species now known in the genus:

1. Racemes or panicles usually fasciculate in the axil of each leaf.
2. Flowers in racemes.
3. Leaves closely serrulate.
4. Stamen about equaling the ovary.
4. Stamen much longer than the ovary.
1. L. Mutisiana R. & S.
2. L. Klugii Mansfeld.
3. Leaves entire.....3. L. Pittieri (Blake) L. B. Smith.
2. Flowers in short-branched panicles.
4. L. bipinnata L. B. Smith.
1. Raceme always solitary in the axil of each leaf.
5. L. pedicellata (Standl.) L. B. Smith.

SPIGELIA POLYSTACHYA Klotzsch. The first known collection of this species since that of the type has appeared in Lundell's plants of British Honduras. It is no. 1971, from Big Fall, Belize River, collected March 17, 1933. This station marks a very large jump from the original one in British Guiana, but the habitat is almost identical.

POLYPOMPHOLYX LONGECILIATA (DC.) L. B. Smith, comb. nov. Utricularia longeciliata DC. Prodr. viii. 23 (1844). Poly-pompholyx laciniata Benj. in Mart. Fl. Bras. x. 261 (1847).

Leaf and axillary
panicles X 1.



Young
flower
X 10.



Panicle-
branch
X 10.



Section of ovary X 10.



LOZANIA BIPINNATA

Fig. 14.

A NEW LONCHOCARPUS

E. P. Killip

LONCHOCARPUS PALLIDUS Killip, sp. nov. Frutex; cortex glaber cinereo-brunneus, lenticellis albis; folia alterna 5-foliolata, rhachide 6--9 cm. longa 4-angulata, flavida, glabra, petiolulis 4--6 mm. longis, corrugatis, sulcatis, foliolis ovatis vel ovato-lanceolatis, 7--11 cm. longis, 3--5 cm. latis, subabrupte acuminatis, basi rotundatis, coriaceis, supra viridibus et subnitentibus, glabris, subtus pallidissimis, glabris vel minute pubescentibus, nervis et venis supra paullo elevatis, subtus non prominentibus; racemi axillares 4-angulati glabri, laxiflori, pedunculis 1-floris, 4--5 mm. longis, bracteolis mox deciduis; calyx late campanulatus, 3--3.5 mm. longus, circiter 5 mm. latus, minute rufo-sericeus; flores flavido-albi (?); vexillum suborbiculari-unguiculatum, lamina glabra circiter 8 mm. longa, ad unguem parce sericeam circiter 1 mm. longam angustata; alae oblongae, circiter 10 mm. longae ungue incluso; staminum tubus 7 mm. longus; ovarium adpresse rufo-hirsutum.

Type in the herbarium of the New York Botanical Garden, collected on low land near river, Camp de Gabeca, Maracassume River region, State of Maranhao, Brazil, September 8, 1932, by R. Froes (no. 1882).

This species belongs to Benthams group Laxiflori, or to Pittiers Epunctati. It is nearest L. denudatus, but differs in the arrangement of the inflorescence, the glabrous leaf-rachis, and other details.

SOME NECESSARY NOMENCLATURAL CHANGES

(with one new species)

H. A. Gleason

The generic name Martia was proposed by two authors independently and at about the same time; by Sprengel for a group of species which he segregated from Hypericum, and by Leandri for a species now referred to Clitoria. In both cases the name began its history as a synonym, but like other generic synonyms liable to be revived during segregation of a genus. The Martia of Leandri is also a homonym, since it is antedated by the Martia of Sprengel.

Schultes observed this homonymy almost immediately, and only one year later proposed the name Martusia as a substitute for Martia Leandri. Benthham considered that Martusia, having no validity as a genus, was still available for use as a generic name, and set up the leguminous genus Martusia Benth. in 1840. Having been informed that his name was incorrect orthographically, he renamed it Martia during the same year, thereby creating another homonym.

Benthham's genus remains to this day without a valid name, under the homonym rule of the International Code. In the meantime, Martusia Schultes has again been used in the segregation of Clitoria, demonstrating the value of the homonym rule. These beautiful legumes of Amazonia, one of which was actually collected by Martius, were very appropriately dedicated to that eminent botanist and explorer, and in renaming them it appears desirable to continue this wish of Benthham. I therefore propose the following substitute name:

Martiodendron Gleason, nom. nov.

Martusia Benth. in Hook. Jour. Bot. 2: 84. 1840. Not Martusia Schultes, 1822.

Martia Benth. op. cit. 146. Not Martia Spreng., 1818.

Martiodendron excelsum (Benth.) Gleason, comb. nov.

Martusia excelsa Benth. in Hook. Jour. Bot. 2: 84. 1840.

Martiodendron parvifolium (Benth.) Gleason, comb. nov.

Martusia parvifolia Benth. op. cit. 103. 1840.

Martiodendron elatum (Ducke) Gleason, comb. nov.

Martusia elata Ducke, Arch. Jard. Bot. Rio 3: 116. 1922.

MARTIODENDRON MACROCARPON Gleason, sp. nov. Arbor excelsa usque ad 45 m. alta, ramis juvenilibus tenuissime puberulis mox glabris, gemmis axillaribus complanatis bivalvis 1 cm. longis; rhachis foliorum 15 cm. longa glabra, petiolo libero 2--3 cm. longo; foliola alterna 9 vel 10, petiolulo crasso nigro 3 mm. longo, laminis subcoriaceis anguste oblongis vel oblongo-lanceolatis, 7--11 cm. longis, 20--33 mm. latis, acuminate, apice ipso obtusis vel leviter retusis, basi rotundatis vel leviter subcordatis, utrinque glabris, supra subnitentibus, venis fere obsoletis, subtus opacis brunnescentibus, venis lateralibus utroque latere 15--20 subrectis prominentibus, venulis reticulatis; inflorescentia paniculata multiflora, pedicellis puberulis brevibus; calyx 15 mm. longus imbricatus, in alabastro anguste conicus; sepala anguste lanceolata extra aureo-sericea intus densius et longius argenteo-sericea numquam late patentia, marginibus externis leviter involutis, marginibus tectis 0.5 mm. latis glabris leviter revolutis; petala flava mox decidua oblonga vel oblongo-elliptica, 14 mm. longa, petalum superum brevissime unguiculatum obovatum 8 mm. latum, petala alia elliptica, 5--6 mm. lata; stamina 5, inter petala inserta, filamentis crassissimis, 1 mm. longis; anthera 1 superior 10 mm. longa, laterales 15 mm., inferiores 12.5 mm., omnes anguste lineari-subulatae; pistillum 15 mm. longum, ovario paullo complanato leviter sericeo in stylum glabrum angustato; legumina elliptica 16 cm. longa, 4.5 cm. lata, tenuiter aureo-sericea arcte reticulato-venosa, ala dorsalis 5 ventralis 10 mm. lata, nervis 2 (suturalibus) basi 3 cm. coalitis.

Type, Krukoff 5015 (in flower), collected near the mouth of the Rio Embira, basin of the Rio Jurua, on varzea land.

The description of the fruit is taken from Krukoff 4950, collected at the same locality and agreeing with the type in foliage characters. A third specimen is Krukoff 5401, collected on terra firma near the mouth of the Rio Macauhan in the Acre Territory. The leaflets are only 5--7 cm. long and 15--23 mm. wide; the legumes average a trifle longer and are 5--6 cm. wide and broadly rounded at the base.

M. excelsum differs from the other species in the broad fruit with narrow wings and in its hairy anthers. M. elatum is certainly very close to M. parvifolium. Ducke states that its buds are smaller, its panicles more pyramidal, and its pods sericeous. From the lack of further contrasting statements, we may infer that the leaf-veins are obscure beneath and the sutural veins of the pod separate to the base, as in M. parvifolium. M. macrocarpon apparently agrees with M. elatum in the size of flowers and fruits. It differs notably from M. parvifolium in its slightly hairy ovary, its conspicuous leaf-veins, and the coalescent sutural nerves of its broad pod.

Apuleya Gleason, nom. nov.

Apuleja Mart. Herb. Fl. Bras. 123. 1837. Not Apuleja Gaertn. Fruct. 2: 439. 1791.

Zenkera Arn., Mag. Zool. & Bot. 2: 548. 1838. Not Zenkera Trin., Linnaea 11: 150. 1837.

Although the International Code provides that names differing by even a single letter may be maintained, it is improbable that anyone would insist on a difference between Apuleja, the original spelling, and Apuleia, as used in the Flora Brasiliensis and on most herbarium specimens. In proposing a new name, I have followed the original pronunciation as nearly as practicable.

Apuleya leiocarpa (Vogel) Gleason, comb. nov.

Leptolobium (?) leiocarpum Vogel, Linnaea 11: 393. 1837.

Apuleja praecox Mart. Herb. Fl. Bras. 123. 1837.

Apuleia leiocarpa Macbr. Contr. Gray Herb. 59: 23. 1919.

Apuleya molaris (Spruce) Gleason, comb. nov.

Apuleia molaris Spruce, Fl. Bras. 15-2: 177. 1870.

It is with regret that I call attention to the change in name of two long established species of Miconia, macrophylla (Don) Triana and serrulata (Don) Triana. The first of these is such a widespread and commonly collected species that it early began to accumulate nomenclatural difficulties. Collected originally by Pavon at the end of the eighteenth century, it first received botanical recognition from David Don in 1823, who described it briefly under the name of Chitonia macrophylla. The Pavon specimen was unknown to De Candolle in 1828, who repeated Don's description verbatim in the Prodrômus, but under the name Diplochaeta, on the basis of preoccupation of the generic name Chitonia by Mocino. Although stating in his description that the leaves are crenulate, he placed the species in a group with entire leaves, and in a second group with crenate leaves he again described the same species twice, as Diplochaeta leucocephala and D. serrulata, and also recognized a variety latifolia under the latter. He also noted two manuscript names which had not been published. In 1844 Steudel described the species again, under the name Decaraphe Hostmanni, placing it in a genus now merged in Miconia which had been proposed in 1840 by Miquel for a Guiana species. In 1850 Miquel again used the same specific names, but expressed doubt on the validity of Diplochaeta.

Not until 1851 did any of these specific names appear in the genus Miconia. Then Naudin recognized the identity of D. Hostmanni and Diplochaeta serrulata and formed the new binomial Miconia serrulata. Diplochaeta leucocephala was at one time considered by him as doubtfully belonging to the same

species, but later in the same year he named it Miconia leucocephala, as a questionable species perhaps the same as M. serrulata. He did not see Pavon's specimen but realized that it was also a Miconia. For it he made the new binomial Miconia platyhedra, since the name M. macrophylla was already in use for a Surinam plant now referred to M. prasina. Triana in 1871 and Cogniaux in 1887 recognized that serrulata, leucocephala, and macrophylla were identical, and each used the name Miconia macrophylla, disregarding the fact that it was already in use.

We have then the following state of affairs. The oldest valid specific name is macrophylla D. Don, but Miconia macrophylla (Don) Triana can not be used because it is antedated by Miconia macrophylla Steud. The next oldest specific names are serrulata and leucocephala. Both were transferred to Miconia, the former definitely and the latter as a doubtful species. Miconia serrulata (DC.) Naud. is therefore its correct name under the International Code.

Cremanium serrulatum was described by Don in 1823. Naudin transferred it to Miconia in 1851 and re-named it as Miconia galactantha, since he had previously used the name M. serrulata. Triana and Cogniaux both used the name Miconia serrulata, but Naudin's combination must stand as the valid name of the plant.

In 1887 Cogniaux diagnosed a Brazilian species under the name Miconia robusta, and another species from French Guiana as M. tschudyoides. Soon discovering that the Guiana plant had previously been named Tschudya robusta by Sagot, he attempted to rectify his error in the Addenda to Flora Brasiliensis in 1888. Here he changed his first M. robusta to M. robustissima and transferred Sagot's specific name to Miconia as M. robusta. This procedure is distinctly contrary to the accepted rules of nomenclature: the first species, validly published, can not receive a new name, while the second can not be given a homonym.

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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I. September, 1935 No. 4

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Published by H. A. Gleason and Harold N. Moldenke

The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number: 50 cents; per volume \$5.00 in advance.

Vol. I, number 3, was issued January 21, 1935.

NEW SPECIES OF PLANTS FROM GUATEMALA (a)

C. V. Morton

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The following new species have been detected in a large collection recently made in Guatemala by Dr. Alexander F. Skutch. Several additional new species belonging to critical groups will be described in a future paper.

CHUSQUEA LANCEOLATA Hitchc., sp. nov. Culmus erectus, 10 m. altus, in diametro ca. 6 cm.; vaginae internodiis breviores, ore nudo; laminae planae, lanceolatae, basi rotundatae, acuminatae, supra glabrae, subtus pubescentes, 12-15 cm longae, 1.5-2.5 cm. latae; panícula ca. 15 cm. longa, ramis 5-7, adscendentibus vel patulis, ramulis brevibus adpressis; spiculae 6-9 mm. longae, glabrae; glumae 2, obtusae, plus minusve inaequales, 0.5-1.5 mm. longae; lemmata sterilia 2, dimidiam spiculam aequantia, acuta vel acuminata; lemma fertile acuminatum, minute apiculatum.

Main culms erect, about 10 meters tall, 6 cm. thick at base; flowering branches leafy, 30 to 40 cm. long, scaberulous, the sheaths slightly roughened, longer than the internodes, naked at summit; ligule firm, slightly dentate, 1 mm. long; blades of the flowering branches lanceolate, flat, rather thin, rounded into a short pubescent petiole 2 to 4 mm. long, acuminate to a fine point, scabrous on the margins, rather strongly tessellate-veined, pubescent beneath, glabrous but slightly roughened on the upper surface, 12 to 15 cm. long, 1.5 to 2.5 cm. wide, the main veins 5 or 6 pairs; panicle more or less inclosed in the uppermost sheath, about 15 cm. long, the main branches 5 to 7, ascending or spreading, floriferous from near the base, the lower 2.5 cm. distant, 7 to 9 cm. long, the axis and branches angled, scabrous-pubescent; spikelets 6 to 9 mm. long, purplish, imbricate on short appressed branches, the ultimate or lateral pedicels mostly less than 1 mm. long; glumes rounded, obtuse, more or less unequal, glabrous, the first 0.5-1 mm. long, the second somewhat longer to twice as long; sterile lemmas about equal, about half as long as the spikelet, acute or acuminate, glabrous except the scaberulous keels, 3- to 5-nerved; fertile lemma about 9-nerved, acuminate, glabrous, minutely apiculate; palea about as long as the lemma.

Type in the U. S. National Herbarium, no. 1,587,761, collected at Santa Elena, Dept. Chimaltenango, Guatemala, alt. 3000 meters, in cypress forest, December 24, 1933, by A. F. Skutch (No. 768).

The species is known only from the type collection. The type specimen consists of two flowering branches 35 to 40 cm. long, with 3 or 4 leaves and a terminal inflorescence. The label gives the height and thickness of the main culm.

PILEA QUERCIFOLIA Killip, sp. nov. Herba monoica, glabra; caules erecti, basi radicales, simplices vel apicem versus ramosi; folia inferioria reducta, decidua, superioria opposita, aequalia, ovata, acuminata, basi rotundata vel auriculata vel interdum obliqua, 3-nervata, membranacea, subtus pallida, grosse serrato-crenata; cymae masculae 10-12-florae pedunculatae, pedunculis filiformibus, floribus pedicellatis, segmentis oblongo-lanceolatis; cymae foeminae pedunculatae, floris segmentis inaequalibus; achaenia lanceolato-ovata, compressa, laevia.

Plant glabrous throughout; stem erect, rooting at the basal nodes, about 30 cm. high, simple or branched near the apex, the lower leaves much reduced and soon deciduous, the lower internodes elongate, up to 5 cm. long; stipules oblong-lanceolate, 4 to 5 mm. long, 2 to 2.5 mm. wide, subacute, soon deciduous; leaves of a node subequal and similar, the petioles 0.7 to 3.5 cm. long, the blades ovate, 4 to 12 cm. long, 2 to 5 cm. wide, acuminate at apex, at base rounded or subauricular, or sometimes oblique, coarsely serrate-dentate from apex to base (teeth ascending, rounded), 3-nerved (lateral nerves extending to the upper third of the blade), membranous, pale beneath, bearing obscure linear cystoliths on both surfaces; plants monoecious, the cymes unisexual; staminate cymes with filiform peduncles 2 to 4 cm. long, 10- to 12-flowered, 8 to 10 mm. wide, the flowers pedicellate, subglobose in bud and 2 to 2.5 mm. in diameter, the segments oblong-lanceolate, about 1 mm. long, dark green, pale at base; pistillate cymes borne at the same axils with the staminate, on peduncles subequal to or slightly shorter than those of the staminate, 7 to 8 mm. wide, the segments 3, markedly unequal, the middle one about 0.8 mm. long, the lateral ones barely 0.2 mm. long; achenes lance-ovate, about 1 mm. long, strongly flattened, obscurely costate on one face, smooth.

Type in the U. S. National Herbarium, no. 1,585,999, collected at Chichavac, Dept. Chimaltenango, Guatemala, alt. 2400 to 2700 meters, in a deep ravine in dense forest, August 19, 1933, by A. F. Skutch (No. 559).

This species is related to *P. gracilipes* Killip, a species common in Costa Rica and western Panama, the two having very similar floral characters. The proposed species is, however, readily distinguished by the larger, proportionately broader leaves, which have much larger teeth, the tooth being, indeed, more pronounced than in any other species

with which the writer is familiar. In general outline the leaves resemble those of Quercus prinus.

DALEA DISPAR Morton, sp. nov. Frutex usque ad 1.8 m. altus, diffuse ramosus; caules hornotini virides, subteretes, 2-3.5 mm. diam., glabri, plus minusve longitudinaliter striati; folia alterna, imparipinnata, stipulis lineari-subulatis, usque ad 10 mm. longis, pubescentibus, petiolo ca. 1.5 mm. longo, viridi, fere glabri, foliolis ca. 7-jugis, oblongis, ca 18 mm. longis et 6 mm. latis, oppositis vel alternis, apice mucronatis, basi obtusis, membranaceis, pallido viridibus, glabris, subtus glanduloso-punctatis, stipellatis, stipellis minutissimis, glabris; inflorescentia racemosa, anguste cylindrica usque ad 17 cm. longa, floribus dense confertis, adscendentibus, pedicellatis, pedicellis brevissimis, ca. 0.6 mm. longis, crassis, apice articulatis, bracteis concavis, lanceolatis, apice longe subulatis, glabris; calycis tubus anguste campanulatus, 3-3.5 mm. longus, 10-costatus, perspicue glanduloso-punctatus, villosus, lobis subulatis, viridibus, ca. 2.2 mm. longis, villosis, margine subspinulosis; flores lutei, vetustiores purpurascens; vexillum longe unguiculatum, ungue usque ad 7 mm. longo, limbo suborbiculari, ca. 4 mm. longo et 3.5 mm. lato, apice obtuso, basi cuneato, non appendiculato, dorso basi villosus; alae longe unguiculatae, ungue tubo stamineo basi adnato, limbo oblongo, ca. 3 mm. longo, valde obliquo, basi uno latere unguiculato; carinae petala alis similia, ca. 4.5 mm. longa, parum connata, apice et basi libera, unguibus liberis; stamina 9 in vaginam connata, vexillari deficiente; ovarium compressum, hirsutum; stylus villosus.

Type in the U. S. National Herbarium, no. 1,494,921, collected at Chichavac, Dept. Chimaltenango, Guatemala, alt. 2400-2700 meters, February 18, 1933, by A. F. Skutch (No. 259). An additional specimen was collected at the same locality, December 2, 1933 (Skutch 725).

This is apparently an isolated species without a close relative, at least among the North American species. In Rydberg's treatment in the North American Flora it would seem to be closest to the Section Leucostomae, differing essentially nevertheless from all species of that section.

GERANIUM PULCHRUM Morton, sp. nov. Sect. Incanoidea? Herba perennis; caules ex radice numerosi, decumbentes, nodis saepe radicantes, graciles, 1-1.5 mm. diam., angulati, strigillosi (pilis retrorsis) vel demum glabrati; folia opposita, radicalia longissime petiolata, petiolo usque ad 14 cm. longo, laminam 3-7-plo longiore, tenui, strigilloso, stipulis lanceolatis, ca. 5 mm. longis, brunneo-scariosis; lamina membranacea, ambitu plus minusve deltoidea, usque ad

2.7 cm. longa et 4.3 cm. lata, fere usque ad basin quinque-partita, segmentis pinnatifidis, ultimis lanceolatis, acutis, pallido-virides, supra pilis sparsis hyalinis rectis acutissimis minutis, sursum spectantibus dissita, subtus hirsutula; pedunculus axillaris, longus (usque ad 10 cm.), pubescens, pilis patentibus vel subadpressis, interdum glandulosis, biflorus, pedicellis usque ad 2.5 cm. longis, glanduloso-pilosis, bracteis subulatis, ca. 5.5 mm. longis; calycis lobi ca. 6.5 mm. longi, ovati, virides vel purpureo-tincti, subulato-mucronati, trinervii, extus strigillosi, pilis longioribus patulis intermixtis; petala lilacina, purpureo-venosa, oblanceolata, ca. 13 mm. longa, 4 mm. lata, apice rotundata, intus basi hirsuta; stamina basi dilatata, ciliata; styli et ovaria pubescentes; fructus deest.

Type in the U. S. National Herbarium, no. 1,587,712, collected at Santa Elena, Dept. Chimaltenango, Guatemala, alt. about 2850 meters, November 25, 1933, by A. F. Skutch (No. 709).

The species is related apparently to G. Palmeri Rose, of central Mexico, but that species has much broader petals (over 10 mm. in width) and longer pedicels, these strigillose rather than glandular-pilose. Furthermore, the stems of G. Palmeri are not prostrate and do not root at the nodes. The latter character seems to place G. pulchrum in Knuth's section Diffusa, although it bears little resemblance to the other species, all South American. It is more probably to be placed in the section Incanoidea.

BUDDLEIA SKUTCHII Morton, sp. nov. Caules teretes, ca. 5 mm. diametro, stellato-puberuli, demum glabrati; folia opposita, stipulata, stipulis connatis, semiorbicularibus, revolutis, crassiusculis, petiolata, petiolo usque ad 27 mm. longo, dense stellato-puberulo, supra canaliculato, lamina oblongo-lanceolata, usque ad 16 cm. longa et 5.5 cm. lata, coriacea, integra, apice acuminata, basi cuneata, obliqua, supra viridi, sparse stellato-puberula, mox glabrata, venis impressis, subtus dense stellato-tomentosa, pilis minutis, albidis vel aureis, venis elevatis, reticulatis; capitulae ca. 16-florae, globosae, densae, 3-5 mm. diametro, in paniculam terminalem sessilem 13 cm. longam et 16 cm. latam dispositae; bracteae minutae, lineares, stellato-tomentosae; flores aurei, sessiles; calycis tubus ca. 0.5 mm. longus, lobis ca. 1 mm. longis, deltoideis, extus stellato-tomentosis, apice acutis; corolla aurea, tubo turbinato, ca. 1.5 mm. longo, glabro, lobis deltoideis, ca. 1.5 mm. longis, obtusis, subrectis, extus stellato-puberulis, intus sparse pubescentibus; stamina 4, fauce affixa, filamentis glabris, ca. 0.5 mm. longis, antheris oblongis, ca. 0.5 mm. longis, introrsis, loculis distinctis, parallelis; ovarium apice

pubescens; stylus indivisus, clavatus; fructus deest.

Type in the U. S. National Herbarium, no. 1,494,931, collected at Chichavac, Dept. Chimaltenango, Guatemala, alt. 2400-2700 meters, February 2, 1933, by A. F. Skutch (No. 269). An additional specimen was collected at the same place in November, 1930 (Skutch 54).

The species is distinguished at once from all other North American species of Buddleia by its small pedunculate heads, disposed in large terminal sessile panicles. The large persistent stipules and entire leaves also distinguish B. Skutchii from most of the other species.

SOLENOPHORA PIRANA Morton, sp. nov. Frutex 1.8-2.4 m. altus; caules fistulosi, ca. 8 mm. diam., subquadrangulati, villosi, pilis hyalinis, multiseptatis, flaccidis, demum subglabrati; folia opposita, longepetiolata, petiola usque ad 10.5 cm. longo, villosulo, lamina elliptica, magna, usque ad 30 cm. longa et 14 cm. lata, duplicato-dentata, apice breviter acuminata, basi cuneata, inaequali, tenuiter membranacea, supra viridi, pilis satis sparsis multiseptatis obsiti subtus pallidiores, fere glabra, venis albidis perspicue reticulatis pilis paucis minutis instructis; inflorescentia axillaris, subumbellata, 3-5-flora, pedunculo communi elongato, usque ad 8 cm. longo, subglabro, bracteis oblongis ca. 16 mm. longis, pedicellis usque ad 37 mm. longis, glabratibus; calycis tubus (pars adnatus) turbinatus, ca. 5 mm. longus, villosus, pars liberus subcampanulatus, ca. 11 mm. longus, ca. 12.5 mm. latus, subglaber, viridis, apice obliquus, lobis inconspicuis, deltoideis, ca. 4 mm. longis, 6 mm. basi latis, perspicue denticulatis, apice acutis; corolla flava, 4-4.5 cm. longa, anguste cylindrica, erecta, basi ecalcarata, 8 mm. lata, sursum paullulum ventricosa, villosa, intus villosula, limbo vix 10 mm. diametro, lobis parvis, subaequalibus, erectis, ca. 5 mm. latis, 2 mm. longis, immaculatis, apice fere truncatis, integris; stamina 4, didynama, filamentis liguliformibus, glabris, rectis, corollae basi adnatis, antheris connatis, exsertis, loculis oblongis, discretis; staminodium evolutum; ovarium omnino inferum; stylus rectus, pubescens, stigmatibus dilatato, concavo; disci glandulae 5, irregulares, fere distinctae, pubescentes; fructus deest.

Type in the U. S. National Herbarium, nos. 1,587,684 and 1,587,685, collected near Chichavac, Dept. Chimaltenango, Guatemala, alt. about 2550 meters, along a stream in a deep ravine, November 11, 1933, by A. F. Skutch (No. 680). An additional specimen was collected at Santa Elena, Dept. Chimaltenango, Guatemala, June 2, 1933 (Skutch 346).

The species is named at the request of Dr. Skutch in honor of Señor Don Axel Pira, his host in Guatemala.

The species is most closely related to S. insignis (Mart. & Gal.) Hanst., a Mexican species known only from the original collection. The description by Martens & Galeotti is short, but a more complete one is given by Fenzl (b). S. Pirana differs in having the disk composed of five rather than two glands and the corolla pilosulous, rather than glabrous within.

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- (a) Published by permission of the Secretary of the Smithsonian Institution.
(b) In Otto & Dietr. Allg. Gartenz. 16: 306. 1848.

THE GENUS BESLERIA IN BRITISH GUIANA (a)

C. V. Morton

Up to the present time only one species of Besleria (Gesneriaceae) has been known from British Guiana. In connection with monographic studies of this genus the writer has noted three more species, none of which can be identified with any previously described.

Key to species

Calyx lobes free.

Calyx more than half as long as the corolla (Subg. Pseudo-besleria); flowers cymose on a common peduncle; corolla red; leaves and stems appressed-pubescent.....1. B. laxiflora.

Calyx one-third as long as the corolla or less (Subg. Parabesleria); flowers aggregate in the leaf axils; corolla yellow; leaves and stems hirsute.....2. B. saxicola.

Calyx lobes united for over one-third their length (Subg. Eubesleria); leaves and stems appressed-pubescent.

Flowers borne on a common peduncle; calyx lobes equal to or a little longer than the calyx tube.....3. B. verecunda.

Flowers aggregate in the leaf axils; calyx lobes one-half as long as the calyx tube.....4. B. insolita.

1. BESLERIA LAXIFLORA Benth., Lond. Journ. Bot. 5: 361. 1846.

Through the courtesy of the Director of the Royal Botanic Gardens at Kew, I have been able to examine the type of this species, an unnumbered specimen collected by Schomburgk in British Guiana. The North American plant which has passed as B. laxiflora is found to be quite different and must bear the name B. chiapensis Brandeg. A second specimen of B. laxiflora, also in the Kew herbarium, was collected at Surinam, Rio Branco, Amazonas, Brazil, by E. Ule (No. 8459).

2. BESLERIA SAXICOLA Morton, sp. nov.

Subg. Parabesleria. Frutex 1.5-1.8 m. altus, vix ramosus; caules teretes, superne hirsutissimi, inferne glabrescentes, ca. 6 mm. diametro; lamina foliorum oblique elliptica, membranacea, maxima ca. 30 cm. longa et 12 cm. lata, apice breviter acuminata, basi late vel anguste cuneata, remote serrata, supra sparse hirsuta demum glabrescens, subtus imprimis in nervis hirsuta, nervis secundariis 7-9; pet-

iolus usque ad 10 cm. longus, angulatus, hirsutus; pedunculus communis nullus; pedicelli numerosi in axillis foliorum, vix 1 cm. longi, hirsuti; lobi calycis liberi, lutei, ovati, valde imbricati, 6-8 mm. longi, apice acuminati vel subulato-acuminati, parce hirsuti, longe ciliati; corolla lutea, ca. 20 mm. longa, utrinque glabra, basi non saccata, sursum ampliata et paullulum ventricosa, lobis vix patentibus, late rotundatis, glabris; filamenta libera, crassa, glabra; antherae liberae vel connatae, loculis confluentibus; staminodium bene evolutum, ca. 3 mm. longum, glabrum, antheram sterilem gerens; ovarium conicum, glabrum; stylus puberulus; stigma bilobum; discus semiannularis, crassus, glaber.

Type in the U. S. National Herbarium, no. 1,056,446, collected by brook in forest, Tumatumari, Potaro River, lat. 5°20' N, British Guiana, January 3-5, 1920, by A. S. Hitchcock (No. 17,375); a duplicate in the herbarium of the New York Botanical Garden.

Additional specimens examined: BRITISH GUIANA: Type locality, Gleason 420 (Gray Herbarium, N. Y. Botanical Garden, National Herbarium); Moraballi Creek, near Bartica, Essequibo River, Sandwith 58 (Kew, N. Y. Botanical Garden); Potaro River, Abraham 345 (Kew).

It is related to Besleria montana Rusby, of Bolivia, but that species is widely different in its long-pilose corollas. A closer relationship is with a species of Peru as yet undescribed.

3. BESLERIA VERECUNDA Morton, sp. nov.

Subg. Eubesleria. Frutex (?) 1.2 m. altus; caules superne sparse strigosi, inferne glabri, teretes; lamina foliorum elliptica vel elliptico-oblonga, maxima 22 cm. longa et 10 cm. lata, apice acuminata, basi cuneata, in petiolum decurrens, serrata basi excepta, supra pilis paucis hyalinis appressis praedita, subtus imprimis in nervis strigosa, nervis secundariis 7-9; petiulus longus (usque ad 7 cm.), parce strigosus; pedunculus communis usque ad 4.5 cm. longus, strigosus, flores paucos (3 vel 4) simpliciter umbellatos vel raro cymosos gerens, pedicellis tenuibus ca. 2 cm. longis, fere glabris, apice vix incrassatis; tubus calycis campanulatus, sparsissime strigosus, ca. 5 mm. longus, lobis 7-8 mm. longis, lanceolatis, integerrimis, apice subulato-acuminatis; corolla 20 mm. longa, glabra, basi ecalcarata, non saccata, sursum vix ventricosa (ca. 7 mm. lata), lobis ca. 2.5 mm. longis, erectis, rotundatis, glabris, aequalibus; antherae connatae, in medio tubae corollae sitae, loculis confluentibus; staminodium basi corollae bene evolutum, ca. 2 mm. longum, antheram sterilem gerens; ovarium ovoid-eum, glabrum; stylus longus, glaber; stigma bilobum; discus annularis, crassus, glaber; bacca coriacea, tuberculata, sem-

inis rubris minutis in utroque parieti placentarum adspersis.

Type in the U. S. National Herbarium, nos. 57,862 and 57,863, collected on the Upper Demerara River, British Guiana, in September, 1887, by G. S. Jenman (No. 5156). Duplicate types are at Kew and the New York Botanical Garden.

Besleria verecunda is not closely related to other species of Eubesleria. It suggests B. laxiflora Benth. (Subg. Pseudobesleria), which occurs in the same region, but that is at once distinguished by its nearly free calyx lobes, its more numerous flowers which are only 12 to 13 mm. long, and its smaller short-petiolate leaves.

4. BESLERIA INSOLITA Morton, sp. nov.

Subg. Eubesleria. Frutex (?) 0.9-1.2 m. altus; caules teretes, superne hirtio-strigosi, inferne glabrescentes; lamina foliorum elliptica vel elliptico-oblonga, maxima ca. 25 cm. longa et 10 cm. lata, apice breviter acuminata, basi cuneata, serrata basi excepta, supra strigosa mox glabrescens, subtus strigillosa, nervis secundariis 8-12; petiolus usque ad 7 cm. longus, strigillosus; pedunculus communis nullus; pedicelli numerosi, in axillis foliorum, 12-15 mm. longi, hirtio-puberuli; calyx flavus, cylindricus 7-16 mm. longus, omnino hirtio-puberulus, lobis quam tubo duplo brevioribus, mucronatis, erectis; corolla ochroleuca (f. Bartlett), calyce paullulum longior, glabra, ecalcarata, vix ventricosa, lobis parvis, rotundatis, glabris; antherae connatae; ovarium glabrum; discus annularis, glaber, tenuis, altus; fructus deest.

Type in the Kew herbarium, collected in French Guiana by Martin.

Additional specimens examined: FRENCH GUIANA: Poiteau (Kew). BRITISH GUIANA: Holmia, Potaro River, November, 1907, A. W. Bartlett 8743 (N. Y. Botanical Garden). A specimen without collector or locality of collection designated is in the Copenhagen herbarium.

The present species is related only to B. lutea, of the West Indies, from which it is distinct by its more narrowly cylindric, hirtio-puberulous calyx, cream-colored flowers, and thin high disk.

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A MONOGRAPH OF THE GENUS TECTONA AS IT OCCURS IN AMERICA
AND IN CULTIVATION

Harold N. Moldenke

The following is the second in my series of monographic studies of the genera of Verbenaceae and Avicenniaceae, the first having been my monograph of the genus Aegiphila published in 1934 [Brittonia 1: 245-477]. In the list of citations of herbarium specimens the following abbreviations of the names of herbaria are employed: A = Arnold Arboretum, Jamaica Plain, Mass.; B = Botanisches Museum, Berlin; Ba = L. H. Bailey Herbarium, Ithaca, N. Y.; Ca = University of California, Berkeley, Calif.; Cb = Conservatoire et Jardin Botaniques, Geneva; Cp = Universitetets Botaniske Museum, Copenhagen; D = Academy of Natural Sciences, Philadelphia; E = Missouri Botanical Garden, St. Louis; Es = Estacion Experimental Agronomica, Havana; F = Field Museum of Natural History, Chicago; G = Gray Herbarium of Harvard University, Cambridge, Mass.; K = Royal Botanic Gardens, Kew; L = Jardin Botanique Principal, Leningrad; N = New York Botanical Garden, New York City; P = Muséum National d'Histoire Naturelle, Paris; R = Trinidad & Tobago Botanical Garden, Port-of-Spain, Trinidad; S = Naturhistoriska Riksmuseet, Stockholm; U = Georgetown Botanical Garden, Georgetown, British Guiana; V = Naturhistorisches Museum, Vienna; W = United States National Herbarium, Washington; Y = Yale School of Forestry, New Haven, Conn.; and Z = H. N. Moldenke Herbarium, Watchung, N. J. To the directors and curators of the above-mentioned herbaria the writer extends his most sincere thanks for their courtesy and kindness in allowing him to study their material of this genus and for their continuous and very generous cooperation throughout the progress of this work. All specimens so studied have been annotated with uniform printed annotation labels and mention is made on each label that the specimen is cited in this monograph. All New World material and all cultivated material thus far received from these 22 herbaria is herein accounted for and cited. Thirty-one other herbaria have been canvassed, but did not contain any New World or cultivated material of this group.

TECTONA L. f. Suppl. 20 & 151. 1781. (a)

Theka Adans. Fam. Pl. 2: 445. 1763. (b)

Nautea Noronha, Verh. Batav. Gen. V, ed. 1, art. 4: 3.
1790.

Tall trees with soft bark and more or less tetragonal branches and branchlets; leaves deciduous, petiolate or sessile, mostly large and broad, entire, opposite or ternate; inflorescence cymose; cymes numerous, many-flowered, borne in massive terminal panicles (with sometimes smaller axillary ones in the upper axils); flowers hypogynous, actinomorphic; calyx gamosepalous, campanulate, shortly 5-7-lobed, persistent, in fruit greatly enlarged and often inflated, including the fruit and closed above it; corolla gamopetalous, hypocrateriform, white or blue, its tube cylindric, short, its limb patent or reflexed, 5-7-parted, the lobes subequal, overlapping in bud; stamens 5 or 6, inserted in the corolla-tube, equal, exserted; anthers ovate or elliptic-oblong, 2-celled, dorsifixed, the thecae parallel, opening by longitudinal slits; pistil single, elongate; style terminal, capillary; stigma very shortly bifid, its branches subequal; ovary compound, composed of 2 carpels, completely 4-celled (each carpel 2-celled), each cell 1-ovulate; ovules lateral or high-lateral, hemianotropous; fruit drupaceous, rounded or weakly 4-lobed, completely included by the enlarged fruiting-calyx, with a thin subcarneous exocarp and a thick bony 4-celled endocarp which has a small central cavity between the cells; seeds without endosperm.

The oldest name for this important genus of plants is Theka, first proposed by Rheede in 1683 and again by Adanson in 1763, but, unfortunately, the much later name, Tectona, is included in the list of nomina conservanda of the International Rules of Botanical Nomenclature, edition 3, as adopted at Cambridge in 1930. The genus, because of the type species, T. grandis L. f., source of teak, is the most important and valuable genus of the Verbenaceae from a purely commercial and economic standpoint. Only three species are known, all natives of southern and eastern Asia. Besides the species which will be discussed in full below, there are T. philippinensis Benth. & Hook. f. (c) [Diospyros tectona Blanco; Tectona Hamiltoniana Schau., p.p.], a native of Luzon, which differs in its leaf-blades being only 8-15 cm. long and 3-6 cm. wide, its petioles 5-7 mm. long, and its tomentum very minute, and T. Hamiltoniana Wall. [Tectona ternifolia Buch.-Ham.; Theka ternifolia Hamilt.], a native of the Malay Peninsula, Burma, and Ava, which differs in its branchlets being subglabrous, its leaves usually ternate and their blades about 24 cm. long and 12.5 cm. wide, its petioles about 1.6 mm. long, its panicles 15-30 cm. long, its calyx-teeth acute, and its corolla blue with a villous throat.

The generic name Tectona is taken from the Latin tectonicus in allusion to the use of the wood of these plants in construction, especially of ships and vessels. Theka is an

adaptation of the vernacular Dravidian name "teka". The genus is divided into two sections by Briquet: Sect. Lachnalcarpae Briq., characterized by an inflated fruiting-calyx and a densely tomentose exocarp, contains only one species, T. grandis; Sect. Leiocarpae Briq., characterized by an enlarged but not inflated fruiting-calyx, closely appressed to the fruit, and a glabrous exocarp, contains the two other known species mentioned above.

TECTONA GRANDIS L. f. Suppl. 151. 1781. (e)

Jatus s. caju jati Rumph. Herb. Amb. 3: 34, t. 18. 1743.

(d)

Tectona Theka Lour. Fl. Cochinch., ed. 1, 137. 1790.

Theka grandis (L. f.) Lam. Illustr. 2: 111. 1793. (f)

Tectona grandis f. abludens Koorders & Valetton, Bijdr.

Booms. Java, no. 7, 171. 1900.

Tree to 50 m. tall; branches and branchlets stout, 4-sided, with large quadrangular pith; twigs stout, very medullose, obtusely tetragonal with rounded angles, usually more or less sulcate between the angles in drying, densely furfuraceous-tomentose with cinereous or ochraceous tomentum; nodes distinctly annulate with usually a corky layer and denser tomentum; principal internodes 4.5-16.5 cm. long; leaves drooping, deciduous, decussate-opposite [or ternate?], short-petiolate or subsessile with a clasping base; petioles very stout, flattened above, rounded beneath, 1-5 (usually 2.5-5) cm. long, more or less margined or alate, densely ochraceous-furfuraceous, or occasionally obsolete; blades firmly membranous or subcoriaceous, very dark green and nitid above, very much lighter and not nitid beneath, broadly elliptic, 11-85 cm. long (to almost 1 m. long on sprouts; mostly 23-55 cm. long), 6-50 cm. wide (mostly 22-37 cm. wide), acute or short-acuminate at apex, entire or repand-denticulate, abruptly acute or long-acuminate at base and prolonged into the alate petiole or clasping at base, densely squamose and rugose (or even bullate) above, becoming glabrate and smooth, densely tomentose, furfuraceous-tomentose, or pubescent beneath with ochraceous, yellowish, reddish, or brownish hairs and densely resinous-punctate, the tomentum sometimes appearing stellate; midrib very stout, somewhat prominent above, very coarsely so beneath; secondaries slender, 9-15 per side, ascending, quite straight and but little arcuate, arcuately joined at the margins, prominent above, prominent beneath; vein and veinlet reticulation very abundant, the tertiaries numerous, issuing at right angles to the secondaries, parallel, usually conspicuous above and prominent beneath; inflorescence axillary (in the uppermost axils only) and terminal, paniculate, massive, the terminal panicles often several feet long and 2

feet or more wide (mostly about 40 cm. long and 35 cm. wide), with distant, opposite, widely divaricate, decussate, many-branched, many-flowered cymes, densely furfuraceous with cinereous or ochraceous tomentum throughout; peduncles and sympodia continuous with the twigs and similar in texture, color, and pubescence, often elongate; pedicels stoutish or slender, 1-4 mm. long, furfuraceous; bracts large and foliaceous, 2 subtending each pair of cymes, resembling the leaves in all respects but smaller; bractlets numerous, lanceolate-linear, to 15 mm. long and 4 mm. wide at base, sessile, ochraceous-furfuraceous, attenuate at apex; prophylla oblong or linear-lanceolate, to 5 mm. long and 1 mm. wide, densely furfuraceous; calyx campanulate, light yellow or light green, 3-4.5 mm. long in all, 3-3.5 (-7?) mm. wide, densely furfuraceous-tomentose, its rim 5-7-toothed or lobed, the teeth ovate or ovate-oblong, 1.5-2.5 mm. long, often reflexed, blunt or obtuse; corolla white (or rosy on the lobes), short-hypocrateriform, glabrous outside and within, its tube broadly cylindric, 1.5-3 mm. long, about 1.5 mm. wide, its limb 5-7-parted, its lobes obovate-elliptic, 2.5-3 mm. long, about 2.3 mm. wide, rounded at apex, overlapping, erect or reflexed; stamens 5 or 6, inserted about 1.3 mm. below the mouth of the corolla-tube (or lower), equal, somewhat exserted; filaments white, filiform, 2.5-4 mm. long, glabrous, ampliate and flattened below; anthers yellow, ovate or oblong, about 1 mm. long and 0.5 mm. wide, dorsifixed near the base; style yellowish-white, slender, 3.6-5.2 mm. long, glabrate or more or less pubescent with branched hairs; stigma yellowish-white, bifid, its branches 0.2-0.5 mm. long; ovary ovate or conical, 1.5-2 mm. long, about 1.3 mm. wide, densely pubescent, dirty white or rosy when fresh, 4-celled, each cell 1-ovulate; fruiting-calyx greatly enlarged and inflated, to 2.5 cm. long and wide, glabrate, papyraceous, light brown and brittle when dry, mostly irregularly plaited or crumpled and bladder-like; fruit subglobose or more or less tetragonally flattened, to 1.5 cm. long and wide, densely tomentose with irregularly branched, light brown or ochraceous hairs, umbilicate and 4-lobed at apex, 4-seeded (rarely 1-3-seeded by abortion), the exocarp thin, somewhat fleshy when fresh, densely pubescent or tomentose, the endocarp thick, bony, corrugated, 4-celled, with a small central lumen between the cells; seeds oily.

This species is the very important teak tree whose wood is the most valuable of all known timbers. It is undoubtedly the most important and most valuable member of the entire Verbenaceae from the point of view of human economics and trade, commanding a higher price on the market than any timber except mahogany. It is a native of and is widely distrib-

uted in tropical and southern Asia and the Malayan region, being especially abundant in the mixed forests of India, Burma, Siam, and Malaya. Its numbers have been greatly reduced in India and Burma by cutting for the timber, but it is now being maintained in special plantations by the government in numerous suitable parts of the British domain. It has been introduced and become naturalized in the Philippines, Java, and the Fiji Islands, as well as in parts of the New World. In India its northern limit is $24^{\circ}40'$ on the western side of the Aravalli hills and $25^{\circ}30'$ N. lat. in the central part near Jhansi. In Burma it extends to $25^{\circ}30'$. In Bengal it is not indigenous, but plantations have been made in Assam north to the 27th parallel. In Punjab it is cultivated north to the 32nd parallel.

The tree attains a height of 120-150 feet and a girth of 20-25 feet in its native habitat. Its trunk is straight and often buttressed. It is unmistakable because of its tremendously large leaves and inflorescences, its clasping-based bractlets and prophylla, and inflated fruiting calyces. According to Standley and others, the crown of the tree is often very large and spreading, especially if it stands alone. The timber is yellowish-brown in color, straight-grained, and easily worked. When once seasoned it does not warp or crack. It is very hard and strong and owing to the presence of an aromatic resinous oil is extremely durable. It has no equal for use in tropical climates and is vastly preferred in temperate climates for certain purposes. It is the most valuable wood known for ship building, being especially preferred for armored vessels, since it does not, like oak, corrode the iron. It is exported in large quantities to Great Britain and other countries for use in the building of ships and railway carriages. No satisfactory substitute has ever been found. In Burma the oil is extracted from the wood and used medicinally and also as a substitute for linseed oil and varnish. A tar, used medicinally, is distilled from it, and the leaves afford a red dye used in Malabar for coloring silks and cotton. The large leaves are used as plates, for thatching, and to wrap parcels by native Burmese.

The first good figure and description of this species were given by Rheedé in his *Hortus Malabaricus*, vol. 4, p. 57, t. 27, in 1683. Perhaps the best modern illustration of it appears in Brandis, *Forest Flora of North-West and Central India*, vol. 3, t. 44 (1874). The species requires a dry tropical climate and thrives best in India where in the summer it receives the heavy rainfall from the southwestern monsoon and the winter is nearly rainless. In regions of a mean annual rainfall of 50 inches it thrives best; where the mean is only 30 inches teak is more scarce. The most favorable mean annual temperature is between 75° and 81° F. The tree

is absent near the coast and inland the most valuable forests are situated on low hills up to 3000 feet in altitude. It can inhabit a variety of soils, but perfect drainage or a dry subsoil is the one indispensable condition. Irregularly shaped stems are produced when drainage is poor.

In the dry season the tree is leafless, the leaves falling off in January in hot regions or remaining on the tree until March in moister climates. When the monsoon begins fresh leaves are produced. It is said that on water-sprouts the leaf-blades may become 2-3 feet long and resemble tobacco leaves. They are said to be whorled occasionally when the tree is young and sometimes subglabrous beneath, but I wonder if these statements do not perhaps apply to another species, T. Hamiltoniana. The inflorescences unfold naturally during the rains, usually in July or August in the tree's native haunts, and the seeds ripen the following January or February. Herbarium specimens in anthesis, however, have been examined which were collected in February, June, July, August, September, October, and November, and in fruit in every month of the year except December. The tree can be distinguished from a distance in the rainy season by its large panicles of white flowers held above the leaves and in the dry season by its feathery fruit-bearing panicles. Many seeds are produced and sown every year by a mature tree of this species, but the numerous and devastating forest fires of the dry season in March and April after the seeds have fallen, greatly impede its spread. Heavy rains wash the seeds down the hillsides and thus seedlings and young trees may occasionally be found also in the valleys. Seed germination is very uncertain since so much moisture is needed. When teak grows with bamboo, as it often does, the young teak seedlings are mostly smothered out by the bamboo.

The bark of the trunk is about 1/2 inch thick, gray or brownish-gray. The sapwood is white, the heartwood golden-yellow, with a pleasant, strong, aromatic odor. When seasoned it darkens into brown, mottled with darker streaks. The odor is retained to a great age. Its extraordinary durability is its chief value. In India beams of teak have been found in buildings several centuries old -- in many cases more than 1000 years old. Some instances have been reported where temple beams were more than 2000 years old and still in perfect condition! It is still used on ocean liners, although iron is now employed generally for war vessels. It is also extensively used for furniture, door and window frames, and railway carriages. Termites eat the sapwood, but rarely the heartwood. The teredo bores into it and therefore metal sheaths are used to protect teak piles on wharves. It does not split, shrink, crack, or warp when once seasoned. It takes a beautiful polish, is easily worked, is not heavy,

and has great elasticity and strength. It weighs 38-46 lbs. per cubic foot, 50 cubic feet weighing approximately a ton. When it is green it is heavier than water and will not float. In order to float the timber down streams to the seaports it must be well seasoned first. This is accomplished by girdling -- making a deep circular cut through the bark and sapwood to the heartwood. A tree thus girdled dies and is allowed to stand 1 or 2 years. The wind and sun completely season the wood of such trees in that time, after which they are felled and floated to the seaports. It is not true that teak trees are tapped for oil before being felled in Burma. Several varieties of teak are distinguished in India, Burma, and Java by the color and texture of the wood, but these are not important distinctions in the timber trade. Soil, elevation, climate, and density of forest influence the grain of the wood. An isolated teak tree has more side branches and therefore more knotty and heavier wood. Fires may scorch or even destroy the bark of young trees, causing an irregular crack or hollow in the center of large logs, where decay may commence. The growth of the tree (in plantations) is in youth very rapid -- a 2-year old seedling is 5-10 feet tall. In 15 years the trees are 60 feet tall with a girth, breast high, of 19 inches. When 80 years old the girth is 72 inches and this is a marketable age. Natural timber grows more slowly because of adverse environmental conditions. A natural forest tree with a trunk 24 inches in diameter is 100-200 years old. The species naturally does not grow in pure stands. It is always associated with bamboo and other trees. India uses most of the teak grown there and the demand is greater there than the supply. It is therefore exported from Burma and somewhat also from Java and Bangkok. Rangoon is where it is mostly used for ship building -- European vessels were formerly built here. From 1901 to 1907 an average of 55,994 cubic tons of teak wood was exported from British India per year. In India now government conservation management controls all teak tracts and a permanent and increasing supply is assured.

Common and vernacular names for the species are of course numerous. In Sanskrit it is "gāka" or "saka", in Arabic and Persian "saj", in Mahratti "sag", in Hindu "sāgūn" and "sagwan", in the Dravidian languages "teka" (Malayan "tekka", Tamil "tekku"), in Portuguese "teke" or "teca", and in English "teak". In Cuba it is called "teca" and in Guadeloupe "bois de tek". In the Philippines it is known as "dalanang", "dalandon", "dāti", "djāti", "hadlayāti", "hāti", "kalayāti", "sagunyāti", "téca", and "yāti". In parts of Malaya it is called "iattie" or "djattie". The so-called "African teak" is Oldfieldia africana Benth. & Hook. f., "bastard teak" in

the East Indies is Pterocarpus Marsupium Roxb. and in Bengal is Butea frondosa Roxb., "Ben teak" is Lagerstroemia microcarpa Wight [although this name is also used for low grades of true teak], "New Zealand teak" is Vitex littoralis A. Cunn. (a tree 50-60 feet tall, yielding hard fissile timber indestructible under water), "white teak" is Flindersia Oxleyana F. Muell., the "teak" of Queensland is Dissiliaria baloghioides F. Muell., and the "teak" or "teakwood" of New South Wales is Endiandra glauca R. Br.

The species is widely cultivated in plantations for timber and also as scattered specimens for ornament or because of the great interest attached to this tree. It tends to escape from cultivation and become naturalized in favorable climates. Lam & Bakhuizen [Bull. Jard. Bot. Buitenz. III, 3: 28. 1921] report its cultivation in Delhi. Hallier f. [Meded. Rijks Herb. Leiden 37: 34. 1918] records it as cultivated in Java and Ceylon and cites his C.34a and C.34b from Java and C.34c from Ceylon. E. D. Merrill [Enum. Philip. Pl. 3: 389. 1923] states that it is cultivated in various parts of the Philippines, especially in the Sulu Archipelago and in parts of Mindanao and that it is now established in the southern part of the archipelago. He also notes that "the tree at Tanay, Rizal Province, Luzon, from which Blanco secured specimens before 1837 still exists there". The same author [Enum. Born. Pl. 512. 1921] records it as cultivated in Borneo, while Setchell [Univ. Calif. Publ. Bot. 12: 204. 1926] found it cultivated in the Society Islands. The following list of citations will prove how widely it is cultivated in tropical parts of the New World. In addition to these records, Grey & Hubbard [List Pl. Atkins Instit. 195. 1933] record the species as cultivated in Santa Clara, Cuba, from stock received from Vilmorin-Andrieux & Cie. in 1927, collected by Barbour, Dorsett, & Higgins, 1928-1929. It is there called "teak" or "teakwood".

The species has become naturalized in at least two places in America -- on the islands of Martinique and St. Vincent -- and probably in other localities not yet recorded. Hahn, who collected it on Martinique, found it in the "vallée de S. Pierre", blooming in July. G. W. & H. H. Smith, who collected it on St. Vincent, say that here it is "a large tree" growing in "second growth spurs of Mt. St. Andrews, to 330 m., on the western side. The species may have been introduced, but now grows wild in this locality". Fruit was observed and collected in May. On another label these collectors say that the trees here are about 60 feet tall already in nearby Belaire Valley.

One hundred and thirty-one herbarium specimens and 13 mounted photographs have been examined.

Citations: MARTINIQUE: Hahn 1275 (Cb, Cb, D, G, K, L, S,

S). ST. VINCENT: Smith & Smith 1273 (B, N-photo, Z-photo), 1573 (K). CULTIVATED: Cuba: Santa Clara: Jack 8118 (A), 8174 (A, A, N, N, W, W, W, W); Roig, Acuña, & Malberti s.n. [Herb. Roig 6145] (Es). Jamaica: G. N. Collins 126 [photo 6851] (W); H. A. Lang 616 (D)* St. Croix: T. Thomson 973 (N)* St. Kitts: Britton & Cowell 416 (B, N). Montserrat: Ryan s.n. [Hort. Rohr] (S). Guadeloupe: R. P. Duss 3786 (E, F, L, N, N, N-photo, W, Z-photo). Martinique: Bélanger 1145 (Cb, Cb, Cb)*; Collector undesignated s.n. (V, V, V, V)*; R. P. Duss s.n. (B, B, N-photo, Z-photo); Kohaut [Sieber] s.n. (Cp); D. S. Martin s.n. [Ex India occid.] (Cb, Cb)*. Barbados: Bailey & Bailey 339 (Ba, N-photo, Z-photo); Dash s.n. [Bot. Stat. Herb. Barbados 578] (F, N, N-photo, W, Z-photo)*. St. Vincent: Guiliding s.n. (K). Grenada: Arnott s.n. (K). Trinidad: W. E. Broadway s.n. [July; 1907] (N), s.n. [Sept. 4, 1916] (Ba, D, E, F, G, N-photo, W, Z-photo), s.n. [Trin. Bot. Gard. Herb. 9691] (R); Pinder s.n. [Trin. Bot. Gard. Herb. 8362] (R, R); T. Thomson 375 (K); Whitford s.n. [April, 1920] (Y); Wrbna s.n. [Sieber Fl. Trinit. 27] (B, B, B, B, B, E, K, V, V)*. Panama: Canal Zone: Bailey & Bailey 466 (Ba); Johansen 50 (W)*; P. C. Standley 26,900 (W, W); Wetmore & Abbe 227 (A, A). British Guiana: British Guiana Bot. Gard. s.n. [January, 1892] (U, U). French Guiana: Poiteau s.n. [Cayenne] (Cb, Cb, K). Brazil: Rio de Janeiro: Bailey & Bailey 43 (Ba); Guillemin 668 (K, P); A. Richard s.n. [Rio de Janeiro] (K); Warming s.n. [Cult. in Hort. Bot.] (Cp); Weddell 425 [Environs de Rio de Janeiro, 1843] (N, N), 425 [Rio de Janeiro, 1844] (N, N); Whitford 2 (E, F, G, N, S, W, Y). China: Kwangtung: Tsiang 3322 (N). India: Bengal: Kurz s.n. [Cult. Hort. Bot. Calcutt.] (N); Wallich 772 (N); Punjab: R. R. Stewart 1107 (N). Ceylon: Baker 126 (Ca, N, N). Philippines: Luzon: Merrill Sp. Blanc. 837 (N). Java: Kuntze 5334 (N, N).

Geographic distribution of the species of Tectona in the New World and in cultivation:

Martinique, St. Vincent:

T. grandis

Cultivated:

T. grandis [Cuba (Santa Clara), Jamaica, St. Croix, St. Kitts, Montserrat, Guadeloupe, Martinique, Barbados, St. Vincent, Grenada, Trinidad, Panama (Canal Zone), British Guiana, French Guiana, Brazil (Rio de Janeiro), China (Kwangtung), India (Bengal, Punjab), Ceylon, Philippines (Luzon), Borneo, Java, Society Islands, Fiji Islands]

Alphabetized list of citations:

Arnott s.n. (*grandis*)

Bailey & Bailey 43 (*grandis*), 339 (*grandis*), 466 (*grand-*

is); Baker 126 (*grandis*); Bélanger 1145 (*grandis*); Bot. Stat. Herb. Barbados 578 (*grandis*); British Guiana Bot. Gard. s.n. [January, 1892] (*grandis*); Britton & Cowell 416 (*grandis*); Broadway, W. E., s.n. [Sept. 4, 1916] (*grandis*), s.n. [July, 1907] (*grandis*), s.n. [Trin. Bot. Gard. Herb. 9691] (*grandis*)
 Collins, G. N., 126 [photo 6851] (*grandis*); Collector undesignated s.n. (*grandis*)
 Dash s.n. [Bot. Stat. Herb. Barbados 578] (*grandis*); Duss, R. P., 3786 (*grandis*), s.n. (*grandis*)
 Guilding s.n. (*grandis*); Guillemain 668 (*grandis*)
 Hahn 1275 (*grandis*); Herb. Roig 6145 (*grandis*)
 Jack 8118 (*grandis*), 8174 (*grandis*); Johansen 50 (*grandis*)
 Kohaut s.n. [Sieber] (*grandis*); Kuntze 5334 (*grandis*); Kurz s.n. [Cult. Hort. Bot. Calcutt.] (*grandis*)
 Lang, H. A., 616 (*grandis*)
 Martin, D. S., s.n. [Ex India occid.] (*grandis*); Merrill Sp. Blanc. 837 (*grandis*)
 Pinder s.n. [Trin. Bot. Gard. Herb. 8362] (*grandis*); Poiteau s.n. [Cayenne] (*grandis*)
 Richard, A., s.n. [Rio de Janeiro] (*grandis*); Roig, Acuña, & Malberti s.n. [Herb. Roig 6145] (*grandis*); Ryan s.n. [Hort. Rohr] (*grandis*)
 Sieber s.n. [Kohaut] (*grandis*), Fl. Trinit. 27 (*grandis*); Smith & Smith 1273 (*grandis*), 1573 (*grandis*); Standley, P. C., 26,900 (*grandis*); Stewart, R. R., 1107 (*grandis*)
 Thomson, T., 375 (*grandis*), 973 (*grandis*); Trin. Bot. Gard. Herb. 8362 (*grandis*), 9691 (*grandis*); Tsiang 3322 (*grandis*)
 Wallich 772 (*grandis*); Warming s.n. [Cult. in Hort. Bot.] (*grandis*); Weddell 425 [Environs de Rio de Janeiro, 1843] (*grandis*), 425 [Rio de Janeiro, 1844] (*grandis*); Wetmore & Abbe 227 (*grandis*); Whitford 2 (*grandis*), s.n. [April, 1920] (*grandis*); Wrbna s.n. [Sieber Fl. Trinit. 27] (*grandis*)

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- (a) This generic name is sometimes misspelled "Tectonia" or "Tektona".
- (b) This generic name is sometimes accredited to Rheede, who first used it in his *Hortus Malabaricus*, vol. 4, p. 57, t. 27, in 1683.
- (c) This binomial is sometimes accredited to E. D. Merrill because he first validated it by publication of a description in *Philip. Journ. Sci. Bot.* 5: 227 (1910); however, in this reference Merrill distinctly accredits the name to Bentham & Hooker f., who first effectively published it as a nomen nudum in their *Gen. Pl.* 2: 1152 in 1876. Inasmuch as an author has the right when publishing

a new name to accredit it to whomsoever he wishes, it being assumed that he has a valid reason for so accrediting it, I see no reason why this name should not continue to stand as Tectona philippinensis Benth. & Hook. f.

- (d) This pre-Linnaean name is often cited merely as "Iatus".
- (e) This binomial is often erroneously accredited to Linnaeus the elder or even to Roxburgh.
- (f) This binomial is sometimes erroneously accredited to Linnaeus [vid., Fr. de Montholou, Notices sur l'Indie, p. 60. 1837].

- * The specimens followed by an asterisk in this list of citations do not definitely state on their labels that they were collected from cultivated material, but since the species is more widely cultivated than naturalized in America, the present monographer is assuming that all New World specimens not definitely marked as having been taken from wild plants were from cultivated material. On the other hand, in regard to Old World material (i.e., tropical Asiatic), all specimens not definitely marked as having been taken from cultivated material are assumed to have come from wild plants.

AN AID IN BOTANICAL DRAWING

E. H. Walker

When taxonomists are asked why they do not publish drawings of their new species, they usually reply that they have no talent in drawing. The writer some years ago was faced with the necessity of making fifty or more drawings to illustrate a tree manual (1), and having no more skill in drawing than the average systematist, he devised the mechanical aid here pictured. This device was subsequently used in preparing illustrations to accompany the descriptions of various new species of plants. Such a drawing can easily be made from an herbarium specimen by placing it on a sheet of glass over an electric light in a semi-darkened room with a sheet of drawing paper over the specimen. The light casts a sharp shadow on the drawing paper, the outline of which can be lightly traced. Frequently more veins show than are visible in the specimen seen by reflected light. The outline with the visible features having been prepared, the drawing is removed and additional details are freely sketched. The drawing is finally inked. If illustrations of dissected flowers or other parts are to be made, the dissection is placed on a millimeter cross-lined glass or paper under a lens or binocular microscope. The drawing is made on cross-ruled paper, the lines of which are as many millimeters apart as is the desired scale of enlargement.

The apparatus here pictured (fig. 15) can be made from two shelf-brackets, a strip of lath, two screw hooks, and a sheet of glass of any size and shape. Almost any desk light can be adjusted to go under the glass; or daylight can be used, the apparatus being placed before a window in a semi-darkened room.

The advantages of accurate line-drawings over half-tone reproductions of photographs of type specimens are usually beyond question, especially in respect to cost. The adoption of a simple mechanical aid like this should greatly reduce the number of newly described species, the identity of which is dimmed by the gloom of a technical description. The apparatus may be used equally well in drawing from photographs and need not be confined to taxonomic illustrating.

- - - - -

- (1) Fifty-one common ornamental trees of the Lingnan University campus. Lingnan Sci. Journ. 6: 1-166. 1 pl. 56 figs. 1928 (issued 1930).

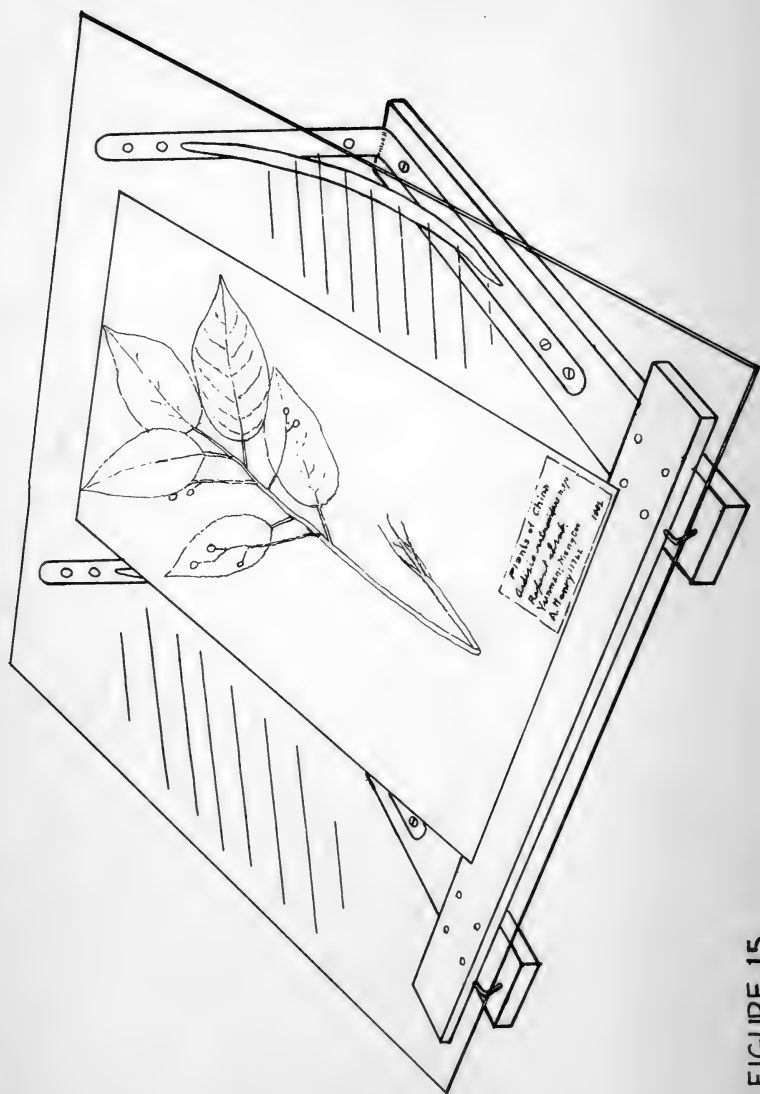


FIGURE 15

NOMENCLATURAL AND TAXONOMIC NOTES

Harold N. Moldenke

Study of newly received material in the herbarium of the New York Botanical Garden has revealed the necessity for the following new scientific names and combinations and has disclosed two species new to science.

ALOYSIA LIGUSTRINA var. PARAGUARIENSIS (Briq.) Moldenke, comb. nov. Lippia ligustrina var. paraguariensis Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 305. 1904.

ALOYSIA URUGUAYENSIS Moldenke, nom. nov. Lippia affinis Briq., Bull. Herb. Boiss. 4: 339. 1896 [not L. affinis Schau. in DC. Prodr. 11: 576. 1847].

BENTHAMIDIA NUTTALLII (Audubon) Moldenke, comb. nov. Cornus Nuttallii Audubon, Birds of Am. t. 367 (1837); T. & G. Fl. N. Am. 1: 652. 1840.

CHASCANUM RARIFLORUM (A. Terrac.) Moldenke, comb. nov. Hebenstreitia rariflora A. Terrac., Bull. Soc. Bot. Ital. 1892: 424. 1892.

CLERODENDRUM KAEMPFERI var. ALBUM (P'ei) Moldenke, comb. nov. Clerodendron japonicum var. album P'ei, Mem. Sci. Soc. China 1 (3): 144. 1932.

CROTON LAMARCKIANUS Moldenke, nom. nov. Croton Cascarilla Lam. Encycl. 2: 203. 1786 [not C. Cascarilla L. Sp. Pl., ed. 2, 1424. 1763].

DISPORUM SCHAFFNERI Moldenke, sp. nov. Herba usque ad 5 dm. alta brachiata; rhizomate luteo usque ad 5 cm. longo; radiculis numerosis in crassitudine longitudineque subuniformibus; caule glabro nitido, parte non subterranea lineis minutis numerosis tenuissimis purpureis vel nigris notata, dichotomo, ad nodos majores paullo turgido et 2 stipulas plusminusu vaginatas gerenti; ramulis ultimis plusminusu pubescentibus, pilis brevibus (quam 1 mm. brevioribus) sub angulo 90° e ramulis abeuntibus; stipulis lanceolatis, 3-4.5 cm. longis, ad basin vaginatam ca. 8 mm. latis, sensim usque ad apicem acutum vel acuminatum angustatis, integris, paullo puberulentibus vel subglabratibus; internodiis primariis 3.5-8 cm. longis; nodis annulatis; foliis alternis, 2 supremis in quoque ramulo approximatis; petiolis ca. 1 mm. longis vel

obsoletis, in sectione triangulo-ovatis, supra complanatis sulcatisque, subtus 4-7-striatis; laminis ellipticis vel elliptico-ovatis leviter membranaceis, supra atroviridibus, subtus valde pallidis pernitidisque, 8-11 cm. longis, 3-5.2 cm. latis, integris, ad basin rotundatis vel subacutis et plerumque inaequilateralibus, ad apicem longe acuminatis, supra glabris nitidulisque, subtus in venis majoribus parcissime piloso-pubescentibus; venis primariis palmatis 4-6 e basi laminae emergentibus, in textura costae consimilibus, paene ad apicem arcuato-adscendentibus, in crassitudine subuniformibus (apice excluso); venulis numerosis sub angulo 90° e venis primariis costaeque abeuntibus; floribus 1-3; fructibus 1 vel 2, ad apicem ramulorum dispositis; pedicellis fructiferis gracilibus 11-17 mm. longis, ad apicem geniculatis, ubique densiuscule hirsuto-pubescentibus, pilis erectis rigidis sub angulo 90° e pedicello abeuntibus; fructibus juventute pyriformibus, senectute plusminus complanatis, 7-9 mm. longis, 8-10 mm. latis, valde 2- vel 3-lobatis, densissime stellato-tomentosis, pilis flavis longitudine variis, radio centrali quam lateralibus duplo vel triplo longiore; seminibus glabris.

The type of this species was collected by Delzie Demaree (No. 10,749) on wooded north hillsides in the C. C. C. Camp Gordon at Friendship, Shawnee State Forest, Scioto Co., Ohio, June 21, 1934, and is deposited in the herbarium of the New York Botanical Garden. The species is remarkable for its decidedly lobed and densely stellate-tomentose fruits. On D. lanuginosum (Michx.) Nichols., a species common throughout the eastern states and also collected by Demaree (No. 10,748) at the same locality on the same date, the fruits are glabrous and nitid or rarely marked with here and there a scattered, simple, very short, and obscure hair. On the western North American D. oreanum (S. Wats.) W. Miller, of British Columbia, Washington, Oregon, Idaho, and Montana, the fruits are puberulent with simple hairs and the leaves are decidedly ovate and cordate-clasping at the base. On D. Smithii (Hook.) Piper, of California, Oregon, and Washington, and on D. Hookeri (Torr.) Nichols., of California, the leaves are perfectly glabrous beneath, as also are the unlobed fruits. On D. trachycarpum (S. Wats.) Benth. & Hook. the fruits are densely squamulose. On D. trachyandrum (Torr.) Britton, of Oregon and California, the unlobed fruits are also glabrous and nitid. D. parvifolium (S. Wats.) Britton, of Oregon, has very much smaller leaves and is very much more dwarf in stature, with very short internodes.

Our species is most closely related to D. maculatum (Buckl.) Britton, a species of the mountains of North Carolina, Tennessee, Kentucky, and Georgia and recently found in

abundance by Demaree (No. 10,597) at Camp Gordon along with D. lanuginosum and D. Schaffneri. On the twelve specimens of D. maculatum in the herbarium of the New York Botanical Garden, however, the leaves are decidedly chartaceous and fragile and noticeably smaller (3-8 cm. long and 1.2-3.8 cm. wide), more acute at the base, very sparsely puberulent or strigillose with scattered hairs above and more densely puberulent with soft hairs beneath, the stems are not regularly marked with purple linear dashes, and the ovaries vary from subglabrate to pubescent with long whitish hairs of irregular size, but not at all stellate and not at all uniformly distributed over the surface; in fact, the hairs are mostly borne in 2 or 3 bands on the ovary, with the intervening portions subglabrate.

The species is named in honor of Prof. John Henry Schaffner of Ohio State University, who sent the type specimen to me with a description of its distinguishing characteristics and the suggestion that it probably represented a new species. Flowering specimens of D. Schaffneri and fruiting specimens of D. maculatum from Ohio, preferably from the type locality of D. Schaffneri, are needed in order to settle definitely the relationship between these two species. D. Cahnæ Farwell, from Michigan, is also closely related to these species, but only a flowering topotype of this species has thus far been available for study, on which the ovary, while pubescent, was not stellate.

D. Schaffneri has also been collected by Arthur R. Harper at Churn Creek, Adams Co., Ohio, on July 15, 1928.

GHINIA JUNCEA (Schau.) Moldenke, comb. nov. Tamonea juncea Schau. in Mart. Fl. Bras. 9: 177. 1851.

GHINIA SPICATA (Aubl.) Moldenke, comb. nov. Tamonea spicata Aubl. Pl. Guian. 2: 660, t. 268. 1775.

HELENIMUM DENTICULATUM (Nutt.) Moldenke, comb. nov. Leptopoda denticulata Nutt., Trans. Am. Phil. Soc. II, 7: 373. 1841. The name Helenium decurrens published by myself for this plant in Bull. Torrey Club 62: 230 (1935) is invalid because it is a homonym of H. decurrens Vatke, Ind. Sem. Hort. Berol. App. (1875).

HUMULUS SCANDENS var. VARIEGATUS (F. Roem.) Moldenke, comb. nov. Humulus japonicus var. variegatus F. Roem., Am. Florist 8: 489. 1892; Gartenfl. 42: 19, t. 4 & 5. 1893. The binomial, Humulus scandens, has been very recently proposed for this common species of Asiatic hop by E. D. Merrill [Trans. Am. Philos. Soc. 24 (2): 138. 1935] on the basis of an older name of Loureiro.

LANTANA ARISTATA var. ANGUSTIFOLIA (Kuntze) Moldenke, comb. nov. Lippia aristata var. angustifolia Kuntze, Rev. Gen. Pl. 3: 251. 1898.

LANTANA ARISTATA var. PLURIPEDUNCULATA (Kuntze) Moldenke, stat. nov. Lippia aristata f. pluripedunculata Kuntze, Rev. Gen. Pl. 3: 251. 1898.

PHRAGMITES MAXIMUS var. VARIEGATUS (A. S. Hitchc.) Moldenke, comb. nov. Phragmites communis var. variegata A. S. Hitchc. in Bailey, Stand. Cycl. Hort. 5: 2601. 1916. The name Phragmites has been considered masculine by many authors and feminine by as many other authors. Trinius' original description of the genus gives no hint as to what he considered to be its gender -- his only species there published being P. communis. Steudel, however, accredits four or five other specific combinations to Trinius "in mss." and these are given with the masculine ending. Dioscorides, from whom Linnaeus took the name Phragmites in his Arundo Phragmites, according to classical Greek lexicons considered the word as masculine. The binomial Phragmites maximus has recently been proposed for this common plant by Chiovenda [Nuov. Giorn. Bot. Ital. 26: 80. 1919] on the basis of an older binomial of Forskål [cf., Merrill, Trans. Am. Philos. Soc. 24 (2): 79. 1935].

PHYLA NODIFLORA var. PUSILLA (Briq.) Moldenke, comb. nov. Lippia nodiflora var. pusilla Briq., Arkiv Bot. 2, no. 10: 19. 1904.

STACHYTARPHETA MINIACEA Moldenke, sp. nov. Herba perennis; ramis ramulisque puberulentibus plusminus obtuse tetragonis, juventute brunneis, senectute stramineis; foliis decussato-oppositis; petiolis onsoletis; laminis membranaceis oblanceolatis, 5-10.5 cm. longis, 2-3.5 cm. latis, ad apicem abrupte acutis, ad basin integram longe (1.5-4.5 cm.) cuneatis, ultra basin grosse serrato-dentato, supra sparsissime strigillosis (pilis late dispersis brevissimis saepe non conspicuis), subtus dense (sed non manifesto) puberulentibus (pilis paullo majoribus in costa et in venis secundariis); venis secundariis arcuatis utroque ca. 4, non directe in dentes excurrentibus; spicis usque ad 36 cm. longis, ca. 1 cm. latis, rhachide senectute leviter excavato, bracteis semper late patentibus; corolla minia.

The type of this species was collected by R. S. Pelly (No. 14) along roadsides and in clearings in acache bush country at the Freshwater Creek Reserve, British Honduras, in February, 1933, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The collector describes the

plant as four feet tall, with vermillion flowers.

VERBENA PATAGONICA Moldenke, nom. nov. Verbena bonariensis Rendle, Journ. Bot. 42: 370. 1904 [not V. bonariensis L. Sp. Pl. 20. 1753].

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A MONOGRAPH OF THE GENUS RECORDIA

Harold N. Moldenke

The following is the third in my series of monographic studies of the genera of Verbenaceae and Avicenniaceae. In the list of citations of herbarium specimens the following abbreviations of the names of herbaria are employed: B = Botanisches Museum, Berlin; E = Missouri Botanical Garden, St. Louis; F = Field Museum of Natural History, Chicago; G = Gray Herbarium of Harvard University, Cambridge, Mass.; K = Royal Botanic Gardens, Kew; N = New York Botanical Garden, New York City; S = Naturhistoriska Riksmuseet, Stockholm; V = Naturhistorisches Museum, Vienna; X = Herbarium Boissier, Geneva; and Z = H. N. Moldenke Herbarium, Watchung, N. J. To the directors and curators of the above-mentioned herbaria the writer extends his most sincere thanks for their courtesy and kindness in allowing him to study their material of this genus and for their continuous and very generous cooperation throughout the progress of this work. All specimens so studied have been annotated with uniform printed annotation labels and mention is made on each label that the specimen is cited in this monograph. All material thus far received from these ten herbaria is herein accounted for and cited. Forty-three other herbaria have been canvassed, but did not contain any material of this group.

RECORDIA Moldenke, Phytologia 1: 99. 1934.

Shrubs or trees; leaves deciduous, opposite, petiolate, serrate; inflorescence racemose, terminal, many-flowered; flowers hypogynous, zygomorphic; calyx gamosepalous, tubular-campanulate, irregular, cleft on the lower (abaxial) side, 5-ribbed, the 3 upper ribs terminating in very short apiculations, the 2 lower ribs not ending in apiculations or only very obsolete ones; corolla gamopetalous, hypocrateriform, irregular, its tube obconic, not greatly curvate, its limb 5-parted, 2-lipped, its lobes spreading, the 2 uppermost (adaxial) smallest, the 2 lateral ones medium-sized, and the lowest (abaxial) one largest; fertile stamens 4, di-

dynamous, inserted in the corolla-tube below its mouth, the 2 lowest being the longer, the fifth stamen reduced to a filiform anantherous staminode; anthers sagittate, dorsifixed, 2-celled, the thecae divergent at the base and opening by longitudinal slits; pistil single; style simple, terminal, curve at apex, the convex arch flattened and stigmatiferous; ovary fusiform, compound, superior, abruptly narrowed into the style-base at apex, 2-celled, each cell 1-ovulate.

Only one species, the type of the genus, is known thus far, although more may be discovered when South America is more thoroughly explored botanically. The genus is named in honor of Prof. Samuel James Record, professor of forest products at Yale University, whose admirable and painstaking researches into the vast field of comparative wood anatomy have contributed so much of inestimable value to the science of botany and whose generous cooperation, freely given, has proved invaluable so many times to his taxonomic colleagues.

Although structurally a member of Briquet's Verbenoideae Petraeeae, the genus Recordia greatly resembles in habit and general appearance the genus Citharexylum. Very superficially the genus also resembles the rubiaceous genus Alseis, especially in habit, but the epigynous flowers of the latter genus of course at once distinguish it from ours. The genus Recordia, insofar as it is now known, is confined to Bolivia.

RECORDIA BOLIVIANA Moldenke, Phytologia 1: 99-101, fig. 13. 1934.

Shrub or tree; branches and branchlets rather stoutish, subterete, grayish, glabrous; twigs and immature shoots brown and densely cano-pubescent with short hairs; nodes annulate; leaf-scars sessile, not borne on sterigmata; internodes abbreviated, 5-16 mm. long; leaves decussate-opposite, mostly clustered at the tips of young twigs; petioles rather slender, 3-12 mm. long, densely short-pubescent; blades thinly membranous or chartaceous, dark green, blackening in drying, elliptic, 5.2-10.5 cm. long, 2.2-4.4 cm. wide, short-acuminate, sharply but minutely serrate almost to the middle or subentire, abruptly acute or short-cuneate at the base, not glanduliferous, sparsely strigillose or puberulent above (or sometimes glabrate), densely short-pubescent or occasionally subvelutinous beneath, especially on the larger veins and when immature; midrib slender, flat or impressed above, prominent beneath; secondaries 5-7 per side, ascending, often not conspicuously arcuate, anastomosing at the margins; veinlet reticulation slender, often obscure; racemes erect, 7-13 cm. long and to 2.5 cm. wide, very densely many-flowered, terminating branchlets and axillary twigs; peduncle slender, abbreviated, 5-8 mm. long, densely cano-

pubescent; rachis slender, densely cano-pubescent; pedicels very slender, 2-3.5 mm. long, densely pubescent; prophylla minute, setaceous, mostly inconspicuous; flowers mostly borne in 2-, 3-, or many-flowered fascicles along the rachis, very numerous; calyx tubular-campanulate, about 4.9 mm. long and 2.5 mm. wide at apex, rather densely pubescent on the outside, glabrous within, fissured on the lower (abaxial) side to almost 1.8 mm., 5-ribbed, the 3 upper ribs terminating in very short (about 0.2-0.3 mm. long) apiculations (the central rib often slightly larger than the two lateral ones), the 2 lower ribs not terminating in apiculations or in very obsolete ones; corolla zygomorphic, hypocrateriform, not noticeably curvate, its tube obconic, about 6.5 mm. long and 0.5 mm. wide at base, ampliate to 3.6 mm. just below the limb, glabrous outside, slightly short-pubescent in the throat within, its limb 5-parted, its lobes lightly puberulent outside, short-pubescent within, the 2 uppermost (adaxial) lobes smallest, ovate-lingulate, about 1 mm. long and 1.5 mm. wide at base, rounded at apex, the 2 lateral lobes medium in size, triangular-ovate, 2-3 mm. long and 2-2.8 mm. wide at base, rounded at apex, the lowest (abaxial) lobe triangular-ovate, about 3.5 mm. long and 3 mm. wide at base; fertile stamens 4, didynamous, inserted about 2 mm. below the mouth of the corolla-tube, the 2 lower ones largest (with filaments about 3.2 mm. long), the 2 lateral ones shorter (with filaments about 1.2 mm. long), the fifth stamen reduced to a filiform anantherous staminode about 1 mm. long and inserted about 1 mm. below the fertile stamens; anthers sagittate, dorsifixed, about 1 mm. long, the thecae divergent at base; style simple, terminal, about 7.1 mm. long, glabrous, narrowed toward the apex, at the apex laterally bent, with the ovate convex upper surface flattened and stigmatiferous; ovary fusiform, about 1.3 mm. long and 0.5 mm. in diameter, at the apex abruptly attenuate into the style-base, glabrous, 2-celled, each cell 1-ovulate; ovules attached in the axil of the exterior dissepiment about at the center of the ovary; fruiting-calyx and fruit not seen.

The type of this species, which is the type species of the genus, was collected by José Steinbach (No. 7240) at Bañado, Río Surutu, Sara, Santa Cruz, Bolivia, at an altitude of about 400 m., on October 1, 1925, and is deposited in the herbarium of the Naturhistoriska Riksmuseet at Stockholm. The species ascends to 1600 m. according to Troll, and seems to be endemic to the mountains of Santa Cruz, Bolivia. Seventeen specimens, including the type, and three photographs have been examined.

Citations: BOLIVIA: Santa Cruz: Steinbach 7240 (B-isotype, B-isotype, E-isotype, F-isotype, G-isotype, N-fragment

& photo of type, S-type, Z-photo of type), 7296 (B, E, F, G, S); Troll 969 (B); Werdermann 2707 (S); Province undetermined: Bridges s.n. [1846] (K), s.n. [1850] (X); Cuming 152 (V). ILLUSTRATIONS: Phytologia 1: fig. 13. 1934 (N).

Geographic distribution of the species of Recordia:

Bolivia:

R. boliviana [Santa Cruz]

Alphabetized list of citations:

Bridges s.n. [1846] (boliviana), s.n. [1850] (boliviana)

Cuming 152 (boliviana)

Steinbach 7240 (boliviana TYPE), 7296 (boliviana)

Troll 969 (boliviana)

Werdermann 2707 (boliviana)

TWO NEW MELASTOMES OF THE KRUKOFF COLLECTION

H. A. Gleason

HORMOCALYX Gl. gen. nov.

Melastomaceae Miconieae: Flores 5-meri axillares; hypanthium campanulatum setosum; calycis tubus prolongatus erectus truncatus, dentibus exterioribus in annulum herbaceum horizontaliter patentem coalitis; petala 5 inaequilatera obovata magna; stamina 10 isomorpha, intheris crasse linearibus, poro terminali dehiscentibus, connectivo paulo elevato simplici; ovarium inferum 2-loculare, summo plano glabro; stylus rectus glaber, stigmatibus semiglobosis. Frutex hirsutus anisophyllus; folia formicariis ad basin laminae ornata.

HORMOCALYX HIRSUTUS Gl. sp. nov. Frutex 5 m. altus; ramuli subteretes juveniles hirsuti demum glabri; folia conferta subsessilia in quoque jugo valde inaequalia; petioli 2-5 mm. longi; laminae majores oblongae vel ellipticae, 8-14 cm. longae, 4-7 cm. latae, breviter acuminatae, integrae, ciliatae, ad basin paulo angustatae et cordulatae, 5-nerviae, supra breviter sparseque flavido-setulosae, subtus ad venas setosae vel setulosae ceterum glabrae; formicariae didyma semi-ovoidea hirsuta, 8-15 mm. longa, in basi liminae et infra basin plusminus pendentia; laminae minores sine formicariis cordato-ovatae, 2-5 cm. longae et fere totidem latae, jugo venarum exteriori in auriculas curvato; flores in axillis foliorum minorum solitarii subsessiles; hypanthium campanulatum herbaceum, ad torum 4 mm. longum, sparse

glanduloso-hirsutum; calycis tubus erectus truncatus hirsutus, 2-2.5 mm. longus, pilis glandulosis 2-3 mm. longis patentibus; dentes exteriores in annulum fere 2 mm. latum hirsutum coaliti, pilis 5 marginalibus quam aliis multo validioribus; petala ut videtur purpurea obovata retusa glabra, 11-12 mm. longa, latere brevior truncato, longior obtuso; filamenta complanata glabra 6.5-7 mm. longa; antherae fere rectae 3.3 mm. longae; ovuli in quoque loculo circ. 12; stylus 9-10 mm. longus, stigmata 1.3 mm. diametro.

Type, Krukoff 7098, collected in "campinarana alta" on the plateau between the Livramento and Ipixuna rivers, Amazonas, Brazil, and deposited in the Britton Herbarium. The stems and bases of the leaves are mostly covered with the black debris used by ants to shelter their runways. This and the numerous short leafy axillary branches make it often difficult to discern the character of the leaf-bases or the position of the flowers.

The distinctive feature of the genus is, of course, the remarkable development of the exterior calyx-teeth, but to this feature may be added the solitary sessile axillary flowers, the 2-celled ovary, and the small number of ovules.

Notwithstanding the axillary flowers, the affinity of the genus is distinctly with Tococa, as shown by the structure of the anthers. These agree almost completely with those of Tococa in shape, connective, and general appearance, but are not incurved at the summit and have a strictly terminal pore. Axillary flowers are known in a few species of Tococa also. In inflorescence the genus is reminiscent of Maieta, but differs notably in its stamens and hypanthium. In general aspect it suggests certain myrmecophilous species of Clidemia, but again differs in the anthers and hypanthium.

CLIDEMIA FEROX Gl. sp. nov. Sect. Staphidium: frutex 5 m. altus ubique hirsutus, pilis fuscis vel stramineis basi incrassatis curvatim patentibus 4-8 mm. longis non glandulosis; folia aequalia vel subaequalia; petioli validi 1-2 cm. longi; laminae late ellipticae, 10-20 cm. longae, 5-11 cm. latae, abrupte breviterque acuminatae vel subcaudatae, integrae, ciliatae, basi rotundatae, 5-nerviae, venis primariis supra leviter impressis subtus elevatis, secundariis supra obscuris subtus prominulis, 5-8 mm. dissitis, sub angulo fere recto divergentibus; flores 6-meri in capitula sessilia axillaria pauci densissime conferti; hypanthium complanatum 10 mm. longum 6-nervium, pilis saepissime versus nervos curvatis et lineas 6 longitudinales formantibus, his lineis in siccis vix manifestis sed in aqua maceratis conspicuis; torus ad basin staminum breviter denseque pilosus; sepala fere ad basin distincta, patentia, late oblonga, 3.2 mm. longa, obtusa, intus densissime sericea, dentibus exterioribus ter-

minalibus tuberculiformibus a pilis obtectis; petala late et inaequaliter obovata, 10 mm. longa, 9 mm. lata, ad apicem subretusam paucisetosa, ad margines tenuia et saepe fimbriatula; filamenta glabra leviter complanata 6 mm. longa; antherae compressae lineares 6 mm. longae, poro terminali dehiscentes, connective basi brevissime 2-lobato; ovarium inferum 6-loculare, ovulis numerosis; stylus rectus 15 mm. longus, in dimidio inferiore dense tomentosus et faucem hypanthii occludens, pilis basi 4 mm. longis gradatim decrescentibus; stigma truncatum.

Type, Krukoff 7262, collected on the shore of the Rio Ipixuna between Monte Christo and Santa Victoria, Amazonas, Brazil, and deposited in the Britton Herbarium. The extraordinarily large flowers in very dense clusters give the plant a superficial aspect resembling Myrmidone or Myriasporea. The number of the ovules and the character of the stamens and stigma distinguish it at once from these genera and show its position in Clidemia. There is apparently only one species in this large genus with which it may be associated, C. longisetosa Hoehne, from the Tapajoz River. That species has flowers of only half the size, a glabrous style, and a 2-celled ovary.

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PHYTOLOGIA

Designed to expedite botanical publication

VOL. 1

February, 1937

No. 5

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Published by H. A. Gleason and Harold N. Moldenke

The New York Botanical Garden

Bronx Park, New York, N. Y.

Price of this number: 50 cents; per volume \$5.00 in advance.

Vol. 1, number 4, was issued September 19, 1935



CHANEKIA, A NEW GENUS IN THE LAURACEAE (a)

C. L. Lundell

In the identification of collections of Lauraceae obtained by the Carnegie-Michigan expeditions to the Yucatan Peninsula, and in studying other material from Mexico and Central America, certain species have been found which apparently represent an undescribed genus. In the course of the study, types and certain other specimens in the herbaria of Field Museum, Arnold Arboretum, and the University of California were examined.

CHANEKIA Lundell, gen. nov. (b)

Panniculæ axillares vel pseudoterminalis; flores in pedunculorum apice subumbellati vel racemosi, hermaphroditi; perianthii tubus infundibuliformis vel subconicus; limbi segmenta 6, subaequalia, inflexa; staminodia cyclorum I, II, et IV nulla; stamina cycli III fertilia, tubum circum gynaeceum formantia; filamenta crassa, biglandulosa; antherae 2-cellulae, extrorsae; ovarium glabrum; hypanthium accrescens, cupulare, dupliciter marginatum; bacca ellipsoidea vel ovoidea.

Trees; leaves alternate; panicles axillary or pseudo-terminal, the peduncles solitary or rarely fasciculate; flowers subumbellate or racemose, perfect; hypanthium conspicuous, infundibuliform or subconical; perianth 6-parted, the segments inflexed, small, unequal, the 3 outer segments largest, enclosing the androecium except for a small apical aperture; stamens of series I, II, and IV absent; staminodia none; the 3 stamens of series III fertile, forming a tube surrounding the gynaeceum; filaments thick, biglandular; staminal tube obtuse-pyramidal, short; anthers 2-celled, extrorse; pores apical, semi-exserted; ovary glabrous; style semi-exserted from the staminal tube or included; accrescent hypanthium cupular, double-margined; berry ellipsoid or ovoid.

Type species, Chanekia campechiana (Standl.) Lundell.

Chanekia is intermediate between Acrodictidium and Misanteca. In Acrodictidium the stamens of series I and II are reduced to foliaceous staminodia, whereas in Chanekia staminodia are absent. In Misanteca the anthers are exserted from the perianth, the stamens of series III are connate to the apex, and the staminal tube is obtuse-cylindric, as contrasted with the included anthers, partially connate stamens, and obtuse-pyramidal staminal tube in Chanekia.

Because the floral characters were not given in the original descriptions, Chanekia campechiana, C. mexicana, and C. misantlae are here redescribed.

CHANEKIA CAMPECHIANA (Standl.) Lundell, comb. nov.

Ocotea campechiana Standl., Carnegie Inst. Wash. Publ. 461: 56. 1935.

Misanteca campechiana (Standl.) Lundell, Carnegie Inst. Wash. Publ. 478: ---. 1937.

A tree, height 8 to 25 m., diameter 35 to 45 cm.; branchlets minutely sericeous, canescent; petioles 4 to 10 mm. long, minutely sericeous; leaf-blades oblong-lanceolate or linear-lanceolate, 4 to 11 cm. long, 0.8 to 3 cm. wide, apex long caudate-acuminate, the acumen obtusish, base acute, coriaceous, minutely sericeous above, glabrate with age, minutely sericeous beneath; costa elevated, lateral nerves inconspicuous; inflorescence axillary, paniculate, 2 to 5.5 cm. long (including the peduncles), the peduncles solitary, minutely sericeous; flowers subumbellate; pedicels 1 to 2.5 mm. long, minutely sericeous; hypanthium obovoid-conical, 2 to 2.3 mm. long, about 2 mm. in diameter, fleshy, minutely sericeous; perianth 6-parted, the segments squamiform, thick, subequal, depressed triangular-ovate, 0.9 to 1.5 mm. wide, acutish, hairy inside; staminodia of series I, II, and IV absent; the 3 stamens of series III fertile, connate at base, forming a tube around the gynaeceum, pilose inside and at base outside; anthers 2-celled, extrorse; the pores apical, semi-exserted from the perianth; glands about equalling one-third the length of the stamen, squamiform, connate laterally at base with those of adjacent stamens; ovary glabrous, 1-celled; style glabrous, included or shortly exserted from the apex of the staminal tube.

Specimens examined: MEXICO: Campeche: Tuxpeña, Lundell 1295, type collection; Lundell 1380. GUATEMALA: Department of Petén: La Libertad, Lundell 3065, 3359, 3409; vernacular names "ektit", "dzol". Uaxactun, Bartlett 12339; vernacular name "copal-chi".

The species also occurs in British Honduras.

CHANEKIA PECKII (I. M. Johnston) Lundell, comb. nov.

Misanteca Peckii I. M. Johnston, Contr. Gray Herb. 70: 70. 1924.

BRITISH HONDURAS: Without locality, Peck 826, type (Gray Herbarium).

The writer has not seen the type, but the species is undoubtedly referable to Chanekia.

CHANEKIA CAUDATA Lundell, sp. nov.

Arbor, 7-metralis; petiolis 4--7 mm. longis, albido-

pubescentibus; folia lanceolato-oblonga, 5--9.5 cm. longa, 1.6--3.2 cm. lata, apice caudato-acuminata, basi subacuta, adulta glaberrima, chartacea; inflorescentia axillaris, subumbellata-racemosa, 2--3.5 cm. longa (pedunculo incluso), pauciflora; pedicellis 3.5--5.5 mm. longis, glabris; flores albi, hypanthio subglobose-turbinato, 1.8--2 mm. longo, 2.2 mm. diametro, carneo, glabro; perianthium 6-partitum, segmentis squamiformibus, crassis, subaequalibus, ca. 1.1 mm. latis; staminodia cyclorum I, II, et IV nulla; staminia cycli III fertilia, basi connata tubum pilosum circum gynaeceum formantia, antheris 2-cellulis, extrorsis; glandulae inconspicuae, squamiformes; ovarium glabrum, 1-cellulum, stylus glaber, breviter ex tubi apice staminalis exsertus; fructus ignotus.

A small tree, height 7 m., diameter 7.5 cm.; branchlets slender, densely pubescent, grayish; petioles 4 to 7 mm. long, canaliculate, pubescent with grayish hairs; leaf-blades lanceolate-oblong, 5 to 9.5 cm. long, 1.6 to 3.2 cm. wide, apex long caudate-acuminate, the acumen narrow, obtusish, oblique, base acutish, glabrous above except for a few hairs along the costa, glabrate beneath or with few scattered appressed hairs, costa prominent, lateral nerves inconspicuous, finely reticulate-veined, chartaceous; inflorescence axillary, subumbellate-racemose, 2 to 3.5 cm. long (including peduncles), the peduncles solitary, 3- to 6-flowered, the flowers white, drying brownish-black; pedicels slender, 3.5 to 5.5 mm. long, glabrous; hypanthium subglobose-turbinate, 1.8 to 2 mm. long, 2.2 mm. in diameter, fleshy, glabrous; perianth 6-parted, the segments squamiform, thick, equal or nearly so, ovate-orbicular, about 1.1 mm. wide, acutish, hairy inside; staminodia of series I, II, and IV absent; the 3 stamens of series III fertile, connate at base, forming a short tube around the gynaeceum, hairy inside and at base outside; anthers 2-celled, extrorse, the pores apical; glands small, squamiform; ovary glabrous, 1-celled; style glabrous, shortly exserted from apex of staminal tube.

Type in the herbarium of the University of Michigan, C. L. Lundell 6183, collected in advanced forest on limestone along the Arenal-Valentin road, El Cayo District, British Honduras, June 21, 1936.

Additional specimens examined: BRITISH HONDURAS: Toledo District: Camp 32, British Honduras-Guatemala boundary survey, Schipp 1279.

CHANEKIA CORIACEA Lundell, sp. nov.

Arbor, 10-metralis, glabra; petiolis 6--10 mm. longis; folia lanceolata vel oblongo-lanceolata, 5.5--11 cm. longa, 1.9--3.8 cm. lata, apice acuminata, basi subacuta, coriac-

ea; infructescentiae axillares, pedunculis 1--3 cm. longis; hypanthium accrescens, cupulare, dupliciter marginatum, 1.6--2.3 cm. diam., ca. 1 cm. longum; bacca ellipsoidea, ca. 1.7 cm. longa, 1.2 cm. diam.

A tree, height 10 m., diameter 22 cm., entirely glabrous; petioles 6 to 10 mm. long; leaf-blades lanceolate or oblong-lanceolate, 5.5 to 11 cm. long, 1.9 to 3.8 cm. wide, apex acuminate, the acumen obtusish, base acutish, coriaceous, costa prominent, lateral nerves inconspicuous; infructescence axillary, bearing a single fruit; peduncle 1 to 3 cm. long, thick; the accrescent hypanthium very shallow, verrucose, cupular, double-margined, 1.6 to 2.3 cm. in diameter, about 1 cm. long; berry ellipsoid, about 1.7 cm. long, 1.2 cm. in diameter, abruptly short-apiculate.

Type in the herbarium of the University of Michigan, W. A. Schipp 1282, collected at Camp 31, British Honduras-Guatemala boundary survey, altitude 700 m.

The herbarium label bears the following data: "Small tree in shady valley, also on hill top in open places; flowers white; fruits black with red pedicel. Occasional."

CHANEKIA MISANTLAE (Brand.) Lundell, comb. nov.

Acrodiclidium misantlae T. S. Brandegee, Univ. Calif.

Bot. 6: 497. 1919.

A small tree, entirely glabrous; branchlets, peduncles, and petioles drying black; petioles 5 to 14 mm. long; leaf-blades elliptic or narrowly elliptic-obovate, 4.5 to 12.5 cm. long, 2 to 4.8 cm. wide, apex obtuse, base cuneate, subcoriaceous, costa elevated beneath, lateral nerves inconspicuous, finely but prominently reticulate-veined; inflorescence axillary, 1.5 to 3.5 cm. long (including peduncles), the peduncles solitary, very slender 1- to 3-flowered, the flowers drying brownish-black; pedicels slender, 3.5 to 7 mm. long; hypanthium subglobose-turbinate, 2 to 2.2 mm. long, 2.5 to 3.6 mm. in diameter, fleshy; perianth shallowly 6-parted, the segments squamiform, thick, subequal, depressed-orbicular, 1.1 to 1.9 mm. wide, rounded or obtuse-apiculate; staminodia of series I, II (?), and IV absent; the 3 stamens of series III fertile, connate at base, forming a short tube around the gynaecium, the tube glabrous inside and outside; anthers 2-celled, extrorse, the pores apical; ovary glabrous, 1-celled; style glabrous, apparently included in the staminal tube; cupule double-margined, 9 mm. in diameter

Specimen examined: MEXICO: Vera Cruz: Misantla, Purpus 8145, type (Herb. Univ. Calif. no. 200935).

Because of the few flowers present on the type, only two were dissected. The character of the glands was not determinable from the material available.

CHANEKIA MEXICANA (Brand.) Lundell, comb. nov.

Acrodiolidium mexicanum T. S. Brandegees, Univ. Calif.

Bot. 6: 497. 1919.

A small tree; branchlets, peduncles, and petioles densely fulvous-pubescent; petioles thick, 3 to 9 mm. long; leaf-blades lanceolate, 4 to 14 cm. long, 2 to 5 cm. wide, apex acute or acuminate, the acumen sometimes obtusish, base obtuse or acutish, brownish-green above and glabrescent with age, paler and pilose beneath, subcoriaceous, costa and lateral nerves slightly impressed above, prominent beneath; inflorescence axillary or subterminal, paniculate, 2 to 5.5 cm. long (including peduncles), the peduncles solitary; flowers subumbellate, numerous; pedicels 2 to 3 mm. long, glabrous; hypanthium subconical, 2 to 2.2 mm. long, about 1.5 mm. in diameter, fleshy, glabrous; perianth shallowly 6-parted, the segments squamiform, thick, subequal, depressed triangular-ovate, 0.8 to 1 mm. wide; staminodia of series I, II, and IV absent; the 3 stamens of series III fertile, connate at base, forming a tube around the gynaecium, pilose inside and at base outside; anthers 2-celled, extrorse; the pores apical, semi-exserted from the perianth; glands one-third the length of the stamen, small, squamiform; ovary glabrous, 1-celled; style glabrous, included or shortly exserted from the apex of the staminal tube.

Specimens examined: MEXICO: Vera Cruz: Zacuapan, Purpus 8081, type (Herb. Univ. Calif. no. 200978); Purpus 14335.

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- (a) Contribution from the Herbarium of the University of Michigan.
- (b) The genus is named for Mercedes Chanek, the Maya plant collector.

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- I

Harold N. Moldenke

Since the publication of my monograph of the genus Aegiphila in 1934 (1) considerable additional information has come to light and a large number of additional specimens and photographs have been examined. In addition to the abbreviations for the names of herbaria listed on pages 249 and 250 of the above-mentioned work, the following are employed in the present contribution: Ba = L. H. Bailey Herbarium, Cornell University, Ithaca, N. Y.; Bb = Barbados Museum and Historical Society, Bridgetown, Barbados; Bc = Barnard College, New York City; Bg = Bergens Museum, Bergen, Norway; Br = Jardin Botanique de l'Etat, Brussels; Bu = W. M. Buswell Herbarium, University of Miami, Miami, Florida; Ch = Carey Herbarium, Royal Botanic Gardens, Kew; Cp = Universitetets Botaniske Museum, Copenhagen; Dc = De Candolle Herbarium, Conservatoire et Jardin Botaniques, Geneva; Dr = Botanisches Institut, Dresden; Ed = Royal Botanic Garden, Edinburgh; Hb = H. Bassler Herbarium, N. Y. Botanical Garden, New York City; He = W. G. Herter Herbarium, Montevideo, Uruguay; I = Langlois Herbarium, Catholic University of America, Washington; J = Brooklyn Botanic Garden, Brooklyn, N. Y.; Le = Rijksherbarium, Leiden; Ls = Linnean Herbarium, Linnean Society, London; Mu = Botanisches Museum, Munich; Ol = Universitetets Botaniske Museum, Oslo; Os = Osborn Botanical Laboratory, Yale University, New Haven, Conn.; Ru = Rutgers University, New Brunswick, N. J.; Th = Thunberg Herbarium, Botaniska Institutionen, Uppsala; Us = Botaniska Institutionen, Uppsala; Ve = Museo Comercial de Venezuela, Caracas; Vu = Botanisches Institut der Universität, Vienna; and Z = H. N. Moldenke Herbarium, Watchung, N. J. All specimens hereinafter cited have been annotated with printed and type-written annotation labels, except those of the Linnean Herbarium.

In addition to the numerous variations in the spelling of the generic name noted on page 250, there have recently come to light "Egiphila", "Aegyphila", and "Aeguephila". It is also worth noting that some specimens of Cornutia pubescens Gaertn. f. have in the past been confused with Aegiphila, the Hahn 920 distributed as "Aegiphila sp." is Bourreria ovata L., and the Pohl 2143 distributed as "Aegiphila sp." is actually Siparuna guianensis Aubl. In the description and discussion of the genus as a whole on pages 251--261 it should be noted that as to habit A. cordata is one of the most beautiful species, A. Deppeana is normally a tree, but

tends at times to become subsacandent, and A. graveolens and the so-called "salutaris" form of A. mollis exude a fetid or nauseous odor. In regard to habitat, A. Herzogii prefers the open pampas, A. Smithii and A. vitelliniflora have been collected in swamps and marshes, while A. graveolens prefers dry hills and fields. As to elevation, A. bogotensis ascends to 3660 m. in Colombia, A. ferruginea to 3200 m. in Ecuador, and A. Killipii to 3000 m. in Colombia. A. anomala, A. obovata, and A. ternifolia have very fragrant flowers, while those of A. Hassleri are narcotic-odorous after sundown. A. Hassleri, A. bracteolosa, A. Candelabrum, and especially A. breviflora have often 2 or 3 distinct types of flowers in the same cyme or at least on the same branchlet. The flowers of A. Smithii are extremely small for the genus. The branches of the terminal pyramidal thyrsi in this genus are always decussate-opposite. In A. graveolens and A. plicata the leaves are densely impressed glandular-punctate beneath. In regard to corolla, the red-purple ones of A. cordata and A. villosissima are noteworthy; those of A. Smithii are especially small in size, while those of A. bogotensis and A. multiflora are especially large. A. Smithii also has especially small calyxes, while those of A. bogotensis are extremely large. A. anomala has the largest calyxes in the genus. The fruit of A. bogotensis is umbonate at apex and that of A. Hassleri is edible. The fact that the fruit of this last-mentioned species is edible should be noted under the economic uses of the genus, as well as the fact that A. Deppeana and A. Luschnathi have been introduced into cultivation. Throughout the monograph "Santander do Norte" should read "Santander Norte" and "Santander do Sur" should read "Santander Sur" (although, actually, the official titles of the Colombian departments in question are "Norte de Santander" and "Santander") -- the "Sur" being here added to distinguish this department more readily from Santander Norte. The number of contributors to our knowledge of the group should be 503 and the number of publications reviewed 191. A list of the several new species and varieties which have recently come to light and their position in the artificial key to species and varieties (pages 263--280), together with other corrections to this key, will be published later. In order to facilitate reference and increase the usefulness of these and all future supplementary notes, the species and varieties will be arranged in alphabetic instead of taxonomic sequence, but each name will be preceded by the number of the species or variety according to the taxonomic sequence proposed in the original monograph. Of extreme interest is the fact that there is no genus cover for Aegiphila in the Linnean Herbarium nor any specimen of A. martinicensis, the type species (often erroneously accredited to him), but

under the genus Clerodendrum sheet number 8 is A. elata and sheet number 9 is A. Deppeana, both regarded as unidentified species of Clerodendrum by Linnaeus.

49a. AEGIPHILA ACULEIFERA Moldenke in Fedde, Repert. 37: 209--210. 1934.

Shrub; branchlets stoutish, tetragonal, deeply 4-sulcate to the apex, densely furfuraceous, abundantly armed with short and more or less recurved prickles about 1 mm. long; principal internodes 3--4.5 cm. long; leaves decussate-opposite; petioles stout, 1.8--2.5 cm. long, furfuraceous, slightly margined; blades thin-membranous, dark green above, somewhat lighter beneath, obovate-elliptic, often very undate in drying, 18--21 cm. long, 7--9.5 cm. wide, acuminate at apex, regularly glandulose-apiculate along the margins (with the apiculations 5--13 mm. apart), cuneate at base, more or less furfuraceous along the venation on both surfaces (and sparingly or obsoletely on the lamina also); midrib stout, very prominent beneath and slightly so above (very broad, especially toward the base above!); secondaries slender, 7--9 per side, prominent beneath, arcuate-ascending, not anastomosing; vein and veinlet reticulation slender, prominent beneath, often undate in drying; inflorescence supra-axillary; cymes solitary, opposite, to 4 cm. long and 5 cm. wide, pronouncedly bifurcate, copiously armed with recurved prickles (about 1 mm. long) throughout, very lax and loosely many-flowered; peduncles stoutish, copiously armed, 1--1.7 cm. long, furfuraceous; pedicels very slender, furfuraceous, 3--4 mm. long; prophylla minute; bracts and bractlets none; calyx obconic, about 7 mm. long and 4 mm. wide at apex, densely pulverulent, sparsely verruculose, its margin 2-lipped, its lips about 2.1 mm. long, equal and truncate; corolla hypocrateriform, white, its tube cylindrical, about 8.3 mm. long, glabrous outside, pubescent within, its lobes 4, oblong-lingulate, about 6.3 mm. long and 3.1 mm. wide, subacute; stamens 4, inserted about 3.6 mm. below the mouth of the corolla-tube, long-exserted; filaments filiform, about 10.8 mm. long, pilose toward the base; anthers oblong, about 1.8 mm. long and 0.7 mm. wide; pistil glabrous, included; style about 5.2 mm. long; stigma bifid, its branches about 3.9 mm. long, parallel; ovary pyriform, about 1 mm. long and 0.9 mm. wide at apex, obscurely 4-lobed, glabrous, 4-celled; fruiting-calyx and fruit not seen.

The type of this very remarkable species was collected by Friedrich Carl Lehmann (No. 8524) at La Conga, in the western Andes of Popayan, at an altitude of 1800--2400 m., El Cauca, Colombia, and is deposited in the herbarium of the Field Museum of Natural History at Chicago. The collector notes that it blooms in June and July. The prickles which

are so abundant on the branchlets, twigs, and peduncles of this species characterize it well and separate it at once from every other known species in the genus. The type collection is erroneously cited on page 349 of my monograph as A. novogranatensis, while the Stork collection is erroneously cited on pages 352 and 476 as A. odontophylla. The Pittier specimen was collected in forests along the Río Naranjo, altitude 200--250 m.; blooming in March.

COSTA RICA: San José: H. Pittier 7584 (Br--2); Cartago: Stork 2230 (A--photo, B--photo, D--photo, F, G--photo, K--photo, N--photo, P--photo, S--photo, W--photo, Z--photo). COLOMBIA: El Cauca: Lehmann 8524 (B--isotype, B--photo of type, F--type, K--isotype, K--photo of type, N--fragment of type, N--photo of type, S--photo of type, W--isotype, Z--photo of type).

3a. AEGIPHILA ALBA Moldenke, sp. nov.

Arbor; ramis ramulisque crassiusculis argute tetragonis, ad nodos valde complanatis; foliorum cicatricibus magnis suberosis; petiolis crassis dense puberulis; laminis tenuiter membranaceis late ellipticis obtusis vel subacutis integris, ad basin attenuatis vel acuminatis, utrinque sparsissime puberulis, glabrescentibus; inflorescentiis axillaribus glomeratis dense multifloris; pedunculis nullis vel brevissimis; pedicellis sub fructu valde incrassatis; calyce fructifero valde incrassato coriaceo, obconico dense puberulente valde lenticellato.

Tree, to 10 m. tall or taller; branches and branchlets rather stout, sharply tetragonal, light gray, rather densely pulverulent or glabrate, conspicuously flattened and ampliate at the nodes; nodes not annulate; principal internodes 2--5 cm. long; leaf-scars large and corky, somewhat prominent, with an equally large scar just above on older wood left by the falling off of the inflorescences; leaves decussate-opposite, very large; petioles stout, 2--3 cm. long, flattened and canaliculate-margined above, convex beneath, densely puberulent with extremely minute grayish hairs, not noticeably ampliate at base; blades thin-membranous, dark green above, much lighter beneath, broadly elliptic, 18--20 cm. long, 8.5--9.5 cm. wide, obtuse or subacute at apex, entire, attenuate or acuminate at base, very minutely puberulent on both surfaces, becoming subglabrate in age; midrib rather stout, flattened or subprominent-rounded above, rounded-prominent beneath; secondaries slender, 14--18 per side, arcuate-ascending, mostly flat above, sharply prominent beneath, conspicuously arcuate-joined near the margins in many loops; vein and veinlet reticulation sparse, mostly obscure on both surfaces or only the larger portions discernible; inflores-

cence axillary, glomerate, borne in the axils of this season's leaves or at the nodes of last season's growth, practically surrounding the branchlets, the glomerules many-flowered; peduncles absent or to 1 or 2 mm. long, deciduous; pedicels very slender, 1--3 mm. long, puberulent, greatly incrassate in fruit; calyx heavy, leathery, obconic, 5.2--5.5 mm. long, 4--5 mm. wide, verruculose, glabrate, the rim 2-lipped, the sinus about 1.3 mm. deep on one side and 2.4 mm. deep on the other side, the lips truncate and equal or again split into 2 or 3 shorter and truncate teeth; corolla infundibular, white, glabrous, its tube slender, about 5 mm. long and 1 mm. wide, ampliate above, its limb 5-parted, its lobes obovate, about 6 mm. long and 2.4 mm. wide, rounded at apex, venose; stamens 5, inserted about 2.4 mm. below the mouth of the corolla-tube, exserted; filaments filiform, 11--12 mm. long, glabrous; anthers narrowly oblong or linear, 2.4--3 mm. long, auriculate at base, often twisted, dorsifixed at about $\frac{1}{3}$ their length; style capillary, included, 2.4--3 mm. long, somewhat flattened, glabrous; stigma bifid, the branches erect, 1.6--3 mm. long, about 0.7 mm. wide; ovary very small, about 1 mm. long and wide, 4-lobed at apex, glabrous, 4-celled; fruiting-calyx very heavy and coriaceous, obconic, to 1 cm. long and wide, prominently lenticellate, densely puberulent; fruit not seen.

The type of this species was collected by Ynes Mexia (No. 6656) in second-growth woods near Quevedo, Canton Vinces, altitude about 50 m., Los Ríos, Ecuador, between October 22 and November 6, 1934, and is deposited in the United States National Herbarium at Washington. Miss Mexia reports that the flowers are white and the tree an abundant one to 10 m. tall, popularly called "lulu". Eggers, who first collected it (in fruit, December 31, 1891), describes it as "arbor altiss." and records the names "koit tree" and "tutumbo".

ECUADOR: Guayas: Eggers s.n. [Balao, 31/12/1891] (B, N--fragment); Los Ríos: Mexia 6656 (N--isotype, N--fragment of type, W--type).

6. AEGIPHILA ANOMALA Pittier.

Addenda and errata to the description as published on pages 288 and 289: Internodes to 4 cm. long; leaf-scars to 7 mm. long and 5 mm. wide; petioles to 2.5 mm. long; blades membranous or subcoriaceous, to 35 cm. long and 13 cm. wide; calyx in anthesis to 6 mm. long and 4 mm. wide, puberulent or very short-pubescent, often 2-lipped; corolla large, exserted; fruiting-calyx very large when mature, obvolute and cucullate only when immature, to 19 mm. wide, often eventually splitting on one side; fruit to 12 mm. long, umbonate with a light and corky umbo at the apex.

The number of the type collection, cited on pages 289 and

475 as H. Pittier 16,711, seems on further investigation to be a herbarium number of the Instit. Physico-geogr. Nat. Costaric. rather than a Pittier number.

Additional citations: COSTA RICA: Limón: H. Pittier s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 16,711] (A--photo of type, B--photo of type, Cb--2 isotypes, D--photo of type, F--photo of type, G--photo of type, K--isotype, N--fragment of isotype, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type); Stork 2290 (F, N--fragment).

21a. AEGIPHILA AUSTRALIS Moldenke, sp. nov.

Frutex; ramulis obtuse tetragonis dense puberulis; hornotinis subgracilibus tetragonis dense breviterque pubescentibus vel tomentellis; petiolis dense breviterque pubescentibus; laminis tenuiter membranaceis obovate-ellipticis brevissime acuminatis integris, ad basin longe acuminatis, supra densiuscule breviterque pubescentibus et glanduloso-punctatis, subtus dense tomentellis; inflorescentiis axillaribus; cymis dense multifloris.

Shrub; branchlets medium, obtusely tetragonal, grayish, densely puberulent, the leaf-scars usually elevated; twigs rather slender, tetragonal, densely short-pubescent or tomentellous; nodes not annulate; principal internodes 1--6 cm. long; leaves decussate-opposite; petioles slender, 2--5 mm. long, densely short-pubescent; blades thin-membranous, dark green above, lighter beneath, obovate-elliptic, 3.5--10.4 cm. long, 1.7--6.3 cm. wide, very short-acuminate at apex, entire, long-acuminate at base, rather densely short-pubescent and glandular-punctate above, densely tomentellous beneath; midrib slender, slightly prominent on both surfaces, more so beneath, but mostly hidden by the dense pubescence; secondaries slender, 5 or 6 per side, arcuate-ascending, not conspicuously anastomosing; vein and veinlet reticulation hidden; inflorescence axillary, solitary, opposite, abundant, shorter than the leaves; cymes densely many-flowered, 1.5--3 cm. long, 1--2.6 cm. wide, more or less brachiate; peduncles very slender, 5--15 mm. long, densely flavescent-pubescent like the twigs; bracts none; bractlets and prophylla linear, 2--5 mm. long, densely flavescent-pubescent; calyx light and thin, obconic, 1.6--2 mm. long, about 1.6 mm. wide, densely short-pubescent, its rim very minutely 4-denticulate, the teeth being merely the terminations of 4 heavier costae; corolla infundibular or hypocrateriform, its tube slender, about 2 mm. long and 1 mm. wide, ampliate above, its limb 4-parted, its lobes elliptic, about 2 mm. long and 1.2 mm. wide, rounded at apex, venose; stamens 4, inserted about 1.8 mm. below the mouth of the corolla-tube, equalling the lobes or exserted; filaments

filiform, 2.5--4 mm. long, twisted, glabrous; anthers oblong, about 1 mm. long and 0.5 mm. wide, dorsifixed near the base, rounded at both ends; style capillary, included, about 2 mm. long, glabrous; stigma bifid, its branches about 1 mm. long, twisted; ovary minute, about 0.5 mm. long and wide, 4-lobed, glabrous, 4-celled; fruiting-calyx and fruit not seen.

The type of this species was collected by Ernst Heinrich Ule (No. 1520) at a laguna in the Campo d'Una, Santa Catharina, Brazil, in December, 1889, and is deposited in the herbarium of the Botanisches Museum at Berlin.

BRAZIL: Santa Catharina: Pabst 435 (B); Ule 1520 (B--type, N--2 fragments of type, P--isotype).

70. AEGIPHILA BARBADENSIS Moldenke.

Additional citations: BARBADOS: Warming 71 (Cp), 101 (A--photo of type, B--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, W--photo of type, Z--photo of type).

3. AEGIPHILA BOGOTENSIS (H.B.K.) Moldenke.

The third synonym on page 283 should read "Amerina tomentosa (H.B.K.) P. DC."

Additional citations: COLOMBIA: Santander Norte: Killip & Smith 19,706 (N); Schlim 306 (Cb, N--photo, Z--2 photos); Cundinamarca: Goudot s.n. [Bogotá] (P--2); Karsten s.n. [Bogotá] (N--photo, Z--photo); Linden 798 (Bm--2, Cb, P, V, X); Mutis 2332 (W), s.n. (P--cotype); Triana 2123 (Bm, Br, Cb, Ed, N--photo, P, Z--2 photos), 3743 (Bm); Tolima: Goudot s.n. [Quindiu] (Z--2 photos); Purdie s.n. [Summit of Quindiu] (K), s.n. (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--2 photos, S--photo, W--photo, Z--2 photos); Nariño: Triana 2124 (Bm--2, Cb, Ed, V, Z--2 photos); El Cauca: Pennell 7097 (N); Department undetermined: Dawe 192 (K). ECUADOR: Carchi: Lehmann 6338 (Z--photo); Pichincha: Schimpff 252 (B--2, Cb, N--fragment), 267 (B--2, Cb); Los Ríos: Rimbach 466 (S). LOCALITY OF COLLECTION UNDETERMINED: Herb. Baillon s.n. (P).

80. AEGIPHILA BOLIVIANA Moldenke.

The Steinbach 5066 cited on page 400 as the type collection, should more accurately be referred to as a cotype. In all my monographic work I am using the term "cotype" in its original meaning (4), viz. "One of two or more specimens together forming the basis of a species, no type having been selected. No species would have both type and cotypes, but either the former or two or more of the latter." The cotype, therefore, as I employ the term, is synonymous with what Bather and Swingle (5, 6) term "syntype".

Additional citations: BOLIVIA: Santa Cruz: Steinbach 2799

(Z--photo), 3116 (Z--photo), 3186 (B), 5066 (A--photo of cotype, B--photo of cotype, D--photo of cotype, F--cotype, G--photo of cotype, K--photo of cotype, N--photo of cotype, P--photo of cotype, W--photo of cotype, Z--photo of cotype), 6437 (A--photo of cotype, B--photo of cotype, Cb--cotype, D--photo of cotype, F--photo of cotype, G--photo of cotype, K--cotype, N--photo of cotype, W--photo of cotype, Z--photo of cotype), 6554 (Cb, K, Z--photo), 7250 (Bm, Ca, Cb, E, Ed, K, N--2 photos, Ut, Z--3 photos), 7289 (B, Bm, Ca, Cb, E, Ed, K, N--photo, Z--2 photos).

23. AEGIPHILA BRACHIATA Vell.

It seems probable that further investigation may reveal Glaziou 14,165 and 17,714 to represent a different species, as yet undescribed, with much smaller calyxes and corollas and smaller, darker, more entire leaves. It also seems probable that the Sellow specimens at Berlin may all be A. Hassleri or a variety thereof.

Additional citations: BRAZIL: Rio de Janeiro: Glaziou 14,165 (B--photo, Br, Cb, Cp, D--photo, F--photo, K, N--2 photos, P, S--photo, W--photo, Z--2 photos), 17,714 (Cb, Cp, K, N--photo, P, Z--2 photos); Paraná: Jönsson 979a (B, Cb, E, N, S, W); Santa Catharina: Fr. Müller s.n. [Schwacke 1465] (Cb); Rio Grande do Sul: Gaudichaud 1801 (P); State undetermined: Sellow 1259 (K), 1269 (B, P), 1322 (B, Bm, N--photo, P, Z--2 photos), 3012 (A--photo, B, G--photo, N--photo, Z--2 photos), s.n. (Vu). PARAGUAY: Jorgensen 3662 (Cp, D, E, S, W).

120. AEGIPHILA BRACTEOLOSA Moldenke.

Aegiphila solanifolia Mart., in herb. -- The name Pseud-aegiphila breviflora Rusby, reduced to synonymy under A. bracteolosa with a question on pages 456--458, has proved upon more careful examination to represent a distinct species. The Cardenas 16, special, cited under A. bracteolosa on page 458, is the type collection of A. breviflora. The 2 Martius collections cited hereinafter and designated as Herb. Monac. 1004 and 1005 are cotypes of A. arborescens var. longiflora Schau.; therefore this trinomial is to be regarded as a synonym of A. bracteolosa rather than of A. integrifolia as stated on page 337.

Additional citations: BRITISH GUIANA: Lang & Persaud 253 (A--photo of type, B--photo of type, D--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type). BRAZIL: Amazonas: Ducke 7351 (Cb--2, N--fragment, N--photo); Jobert 630 (P); Krukoff 5060 (B, Cb, K--2, N--2, S); Luetzelburg 22,296 (Mu); Martius s.n. [Porto dos Miranhao, Decbr.; Herb. Monac. 1004] (Mu), s.n. [Barra de Rio Negro, Octbr.; Herb. Monac.

1005] (Mu), s.n. [Prov. Rio Negro; Herb. Monac. 1006] (Mu); Poeppig 2488 (V, Z--2 photos); Schwacke 3635 (Cb); Spruce 1283 (K), s.n. [In vicinibus Barra] (A--photo, Bm, Cb, D--photo, Ed, F, N--3 photos, P, W--photo, Z--4 photos); Ule 5435 (B, Cb, Le, N--photo, Z--photo); Pará: Spruce 1013 [Herb. Monac. 1003] (Mu). PERU: Loreto: Tessmann 5363 (B, Hb, S). ILLUSTRATION: Line drawing (N).

20. AEGIPHILA BRASILIENSIS Moldenke.

Additional citations: BRAZIL: Rio de Janeiro: United States Exploring Exped. [Wilkes] s.n. [Rio de Janeiro] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--isotype, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

39a. AEGIPHILA BREVIFLORA (Rusby) Moldenke, Phytologia 1: 95. 1934.

Pseudaegiphila breviflora Rusby, Mem. N. Y. Bot. Gard. 7: 1927.

Shrub [or "tall perennial herb" according to Rusby]; branchlets acutely tetragonal, more or less sulcate, very medullose, densely incanous-strigose with short, closely-appressed forward-pointing hairs; internodes 4--5.5 cm. long; leaves decussate-opposite; petioles much reduced, rather stout, 3--4 mm. long, densely incanous-strigose, mostly contracted at apex, slightly alate-margined, canaliculate above; blades chartaceous, dark green above (brunnescent in drying), lighter beneath, oblanceolate, 10--21 cm. long, 3--6 cm. wide, acute or short-acuminate at apex, obsoletely sinuate-serrate with gland-tipped teeth, long-cuneate at base and gradually tapering into the petiole, densely brownish-puberulent on both surfaces; midrib stout, slightly prominulent above, very prominent beneath; secondaries slender, 8--10 per side, lightly arcuate- or falcate-ascending, prominulent beneath, not conspicuously anastomosing; vein and veinlet reticulation sparse, fine and delicate, obscure above, not prominulent beneath; inflorescence axillary; peduncles slender, 1--2 cm. long, densely incanous-strigose with very short closely-appressed hairs; cymes subcapitate, solitary, opposite, 2--3 cm. long, 1--3 cm. wide, once furcate, very densely many-flowered; bracts and bractlets none; prophylla hidden in the dense inflorescence; calyx obovoid-campanulate, 3.5--4.7 mm. long, 2--2.5 mm. wide, densely incanous-strigose, its rim normally 4-toothed with short, equal, erect, obtuse, lobe-like teeth, but often irregularly 3-toothed or more or less 2-labiate with one lip entire and the other 2-lobed; corolla accrescent, slightly exceeding the calyx, straight, its tube cylindric, slender, about 2

mm. long, somewhat ampliate at apex, its limb slightly 2-labiate, the upper lip entire or subentire and to 3 mm. long, the lower lip 3-lobed, with the lobes each smaller than the upper lip [occasionally the limb is 3-lobed or 4-lobed with all the lobes broadly ovate-lingulate, obtuse, and subequal]; stamens 3 or 4, inserted about 1 mm. below the mouth of the corolla-tube, exserted, mostly didynamous, the 2 long ones normally equal and 2.5--5 mm. long, the 2 short ones frequently unequal and 1--2 mm. long [in the occasional 3-lobed corollas only 3 subequal stamens are present]; filaments filiform, slightly flattened, glabrous; anthers oval-oblong, about 1 mm. long and 0.5 mm. wide, dorsifixed near the base, lightly cordate, 2-celled, the thecae parallel; pistil exserted; style capillary, 4--5 mm. long, glabrous; stigma bifid, its branches filiform, strongly and widely recurved, 1--2 mm. long; ovary hemispheric-turbinate, about 1 mm. long and wide, glabrous, its truncate summit bearing a marginal, recurved, membranous, annular appendage (according to Rusby) or non-appendaged and umbilicate and more or less 4-lobed; fruiting-calyx and fruit not seen, although Rusby describes immature fruits as being closely enclosed by the base of the calyx, hemispheric-turbinate, with the annulus much expanded, coriaceous, lustrous, light brown, and recurved so as to conceal the upper third of the fruit, and with a concave center, 2- or 3-sulcate, and 2- or 3-seeded.

The type of this most remarkable species was collected by Martin Cardenas (No. 16, special) at Santa Ana de Yacuma, at an elevation of 700 feet, El Beni, Bolivia, March 4, 1922, and is deposited in the Britton Herbarium of the New York Botanical Garden. This plant was referred by me in my monograph (pages 457--458) with some doubt to A. bracteolosa, which it does indeed closely resemble superficially. A. bracteolosa, however, is a native of British Guiana, Brazil, and Peru, and is confined to Amazonian forests. A. breviflora, if it belongs in this genus at all, is a member of the group Cymosae, subgroup Lobatae, while A. bracteolosa is very obviously a member of the group Paniculatae, subgroup Dentatae. In his original description Dr. Rusby throws out the suggestion that this plant may be a natural hybrid between an Aegiphila species and a Callicarpa. Unquestionably the remarkable variations exhibited by the flowers on the type collection indicate something abnormal, but I am unable to discern any characters which point especially to the genus Callicarpa. The chief characters by which Callicarpa differs from Aegiphila are that in Callicarpa the stigma is capitate or peltate, the flowers are usually polygamous and never diclinous (heterostylous) as in Aegiphila, the stamens are inserted at the very base of the corolla-tube, and the

ovary is mostly pubescent. None of these features is exhibited by our plant, although it does have the axillary inflorescences characteristic of Callicarpa. Whether or not its fruiting-calyxes are accrescent is not yet known. The fact that the type collection seems unquestionably to be abnormal leads me to attach less importance to the didynamous nature of the stamens seen in many of the flowers than does Dr. Rusby. Could it be shown that the stamens are regularly didynamous on normal specimens of this species and could the curiously irregular features of the calyx-rim and corolla-limb be proved to be regular features of the species, and were the remarkable ovary and fruit features mentioned by him always exhibited, then I should perhaps be willing to maintain the genus Pseudaegiphila for this plant. The fact is, however, that there seems very little constancy in these features on the four specimens making up the type collection. Many of the calyxes are quite regularly 4-toothed and not at all labiate, while others are only obscurely so. The corolla limb, too, is quite often almost regular, while on the numerous 3-lobed ones the lobes are all equal. The stamens seem to show no constancy at all. The 3-lobed corolla usually have but 3 stamens and these may or may not be equal in length. The 4-lobed corolla have 4 stamens and these are mostly noticeably didynamous, but not regularly or uniformly so. Usually the 2 shorter stamens are equal or subequal, but the 2 longer stamens mostly are of varying lengths again. The characters of the ovary and immature fruit are similarly inconstant. The strange annular appendage which Dr. Rusby describes is indeed present on a number of the ovaries, but I have examined just as many flowers from the same cyme where the ovary exhibited no trace of this annular ring, but was the normal, umbilicate, 4-lobed, 4-auriculate ovary so wide spread in the genus Aegiphila. The foliar characters of the species are precisely those of A. bracteolosa.

BOLIVIA: El Beni: Cardenas 16, special (K--isotype, MI--isotype, N--type, N--photo of type, W--isotype, Z--photo of type).

102. AEGIPHILA BUCHTIENII Moldenke.

Additional citations: BOLIVIA: La Paz: Buchtien 1716 (Z--photo), 1717 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & photo of isotype).

99. AEGIPHILA CANDELABRUM Briq.

Add to description: Fruiting-calyx campanulate, leathery, 4--6 mm. long, 5--9 mm. wide, densely hirtellous, its rim shallowly 4-toothed with triangular teeth about 1 mm.

long and 4 mm. wide at base, acute at apex, or obscurely repand; fruit drupaceous, elliptic-ovate, 7--12 mm. long, 5--8 mm. wide, mostly subumbonate at apex, glabrous, not nitid.

Additional citations: BRAZIL: Mattogrosso: Hoehne, Com. Rondon 4301 (N). PARAGUAY: Fiebrig 4638 (Cb--2, Z--photo), 4875 (Bm, Cb--2, Ed, Le, Z--3 photos), 5039 (Cb, N--fragment, N--2 photos, Z--2 photos), 5201 (B); Hassler 2886 (Bm, Z--photo), 7974 (Bm, Cb--2, N--2 photos, P, X, Z--2 photos), 7974a (Bm, Cb, P, X, Z--photo), 8120 (Bm--isotype, Z--photo of type).

40. AEGIPHILA CAPITATA Moldenke.

Additional citations: BRAZIL: São Paulo: Burchell 3547 (A--photo of type & photo of isotype, B--photo of type, D--photo of type & photo of isotype, F--photo of type & photo of isotype, G--photo of type, N--photo of type & photo of isotype, S--photo of type, W--photo of type & photo of isotype, Z--photo of type & photo of isotype).

18. AEGIPHILA CASSELLIAEFORMIS Schau.

Additional citations: BRAZIL: Rio de Janeiro: Raben 842 (Br--isotype); São Paulo: Burchell 3669 (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, P--photo, W--photo, Z--2 photos), 3704 (A--photo, B--photo, D--photo, F--photo, G--photo, P--photo, W--photo, Z--photo).

87. AEGIPHILA CAUCENSIS Moldenke.

Additional citations: COLOMBIA: Caldas: Pennell, Killip, & Hazen 8667 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type & 2 photos of isotypes, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & 2 photos of isotypes).

54. AEGIPHILA CAYMANENSIS Moldenke.

It appears that the type collection of this species was gathered on Grand Cayman on January 17, 1891. It should be so written in the citations on page 354 and the New York specimen should be described as "fragment of type".

Additional citations: CAYMAN ISLANDS: A. S. Hitchcock s. n. [Grand Cayman, 1-17-'91] (A--photo of type, B--photo of type, D--photo of type, E--isotype, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

90. AEGIPHILA CEPHALOPHORA Standl.

L. H. and E. Z. Bailey describe this species as a "tree" and record its blooming in July.

Additional citations: PANAMA: Canal Zone: Aviles 988 (F);

Bailey & Bailey 662 (Ba, F); Bangham 543x (N--2 photos, Z--2 photos); Kenoyer 607 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

98. AEGIPHILA CHRYSANTHA Hayek.

The Poeppig 2314 collection, being designated as the type by myself on page 426 from the several collections originally cited by Hayek, ought to be referred to as a logotype.

Additional citations: ECUADOR: Manabi: Eggers 14,838 [Herb. Monac. 1842] (Op, G, K, Le, Mu, N, N--2 photos, P, S, Z--2 photos); Guayas: Eggers 14,348 [Herb. Monac. 1840; Macbride photos 20,349] (A--photo, B, B--photo, D--photo, F--photo, G--2 photos, Le--2, Mu, N--2 photos, P--photo, S--photo, Vu--2, W, W--photo, Z--4 photos); Province undetermined: Schimpff 279 (B). PERU: Loreto: Klug 2027 (A, B, E, K, Mi, W); Poeppig 2314 (N--photo of logotype, P--isotype, Z--photo of logotype). BRAZIL: Pernambuco: Schenck 4074 (N--photo, Z--photo); Bahia: Curran 225 (Z--photo). BOLIVIA: Santa Cruz: Kuntze s.n. (Z--photo).

44b. AEGIPHILA CONTURBATA Moldenke in Fedde, Repert. 37: 210. 1934.

Shrub; branchlets stout, very deeply 4-sulcate to the apex, densely ochraceous-villose-tomentose with very short hairs; internodes 3--5 cm. long; leaves decussate-opposite; petioles stout, 1.5--2.5 cm. long, densely villose-tomentose; blades membranous, very dark above (brunnescent in drying), incanous beneath, obovate-elliptic or obovate, 12.5--13.5 cm. long, 5.5--7.5 cm. wide, acute at apex, entire, cuneate at base, finely short-pubescent above, densely incanous-tomentose with very short hairs beneath; midrib very stout and very prominent beneath, sharp and narrowly prominent above; secondaries slender, 10--13 per side, arcuate-ascending, close together, prominent beneath; inflorescence supra-axillary; cymes solitary, opposite, to 3.3 cm. long and wide, very dense and almost subcapitate, densely many-flowered; peduncles slender, 1--1.7 cm. long, densely villose-tomentose; pedicels slender, tomentose; calyx infundibular, about 6.2 mm. long and 3.6 mm. wide at apex, densely villose outside, glabrous within, its rim irregularly 4-lobed; corolla infundibular, its tube cylindric, about 5.2 mm. long, its lobes 4, oblong-lingulate, about 1.8 mm. long and 1 mm. wide, acute; stamens 4, inserted about 1 mm. below the mouth of the corolla-tube, long-exserted; filaments filiform, about 4.1 mm. long, glabrous; anthers not seen; pistil glabrous, slightly exserted; style slender, about 5.1 mm. long; stigma bifid, its branches about 1.8 mm.

long, not greatly divaricate; ovary oblong, about 0.6 mm. long and wide, truncate at both ends, glabrate, 4-celled; fruiting-calyx and fruit not seen.

The type of this very perplexing species was collected by John Newman in Maranhão, Brazil [the label is inscribed "Maranham"], and is deposited in the herbarium of the Conservatoire et Jardin Botaniques at Geneva. The species differs from A. villosa in its deeply sulcate branchlets, its very short pubescence on the branchlets and leaves (1 mm. long or less), its decidedly pubescent upper leaf-surfaces, and the pronouncedly tomentose character of the pubescence on the lower surface of its mature leaves. Very immature leaves in the process of expanding may exhibit a more villose pubescence, but mature blades never possess the long, straight, ochraceous hairs of A. villosa nor the short, straight, strigose ones of A. intermedia.

BRAZIL: Maranhão: Newman s.n. (B--photo of type, Cb--type, K--photo of type, N--fragment of type, N--photo of type, S--photo of type, Z--photo of type).

112. AEGIPHILA CORDATA Poepp.

Additional citations: PERU: Loreto: Poeppig 2158 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type & photo of isotype, P--isotype, S--photo of type, W--photo of type, Z--photo of type & photo of isotype). BRAZIL: Acre Territory: Ule 9720 (B, K, Le).

113. AEGIPHILA CORDIFOLIA (Ruíz & Pav.) Moldenke.

It is of interest to note that although the original description of this species gives the locality as "Miña", the specimens in the British Museum herbarium are inscribed "Luña".

Additional citations: PERU: Amazonas: A. Mathews s.n. [Chacapoyas] (Bm, Cb, N--fragment); Huanuco: Macbride 3922 (A--photo, B--photo, D--photo, G--photo, K--photo, N--photo, P--photo, S--photo, W--photo, Z--photo); Department undetermined: Ruíz 188 (B--isotype); Ruíz & Pavon s.n. [Miña, Panatagua] (A--photo of isotype, B--photo of isotype, Bm--type, Bm--2 isotypes, Cb--isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--isotype, K--photo of isotype, N--fragment of isotype, N--2 photos of isotypes, P--photo of isotype, S--photo of isotype, W--photo of isotype, Z--2 photos of isotypes).

29. AEGIPHILA CORIACEA Moldenke.

Additional citations: BRAZIL: State undetermined: Frey-reiss s.n. (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type,

N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

10. AEGIPHILA COSTARICENSIS Moldenke.

Errata and addenda to description on page 294: Calyx cylindrical or obconic, 3.5 mm. long and 1.8 mm. wide, light, glabrous, its rim slightly flaring, 5-toothed, its teeth acute; corolla hypocrateriform, its tube very slender, to 8.5 mm. long, its limb 5-parted, its lobes narrowly oblong, 5.2-6 mm. long; stigma bifid, its branches 2.3-2.6 mm. long, parallel; ovary prismatic, 4-lobed, shallowly umbilicate at apex, 4-celled, each cell with one ovule attached at the base. The type collection is sometimes cited as "Tonduz 9167".

Additional citations: COSTA RICA: Guanacaste: Standley & Valerio 44,597 (W), 44,606 (W), 45,538 (A--photo, B--photo, D--photo, F--photo, G--photo, K--photo, N--fragment, N--photo, P--photo, S--photo, W--photo, Z--photo); Puntarenas: H. Pittier s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 16,034] (N--photo, W, Z--photo). PANAMA: Bocas del Toro: Pittier & Tonduz s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 9167] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type & photo of isotype, P--photo of type, S--photo of type, W--isotype, W--photo of type, Z--photo of type & photo of isotype); Tonduz 8564 [Herb. Monac. 4094; Herb. Instit. Physico-geogr. Nat. Costaric. 8564] (Mu, W).

35. AEGIPHILA CRENATA Moldenke.

It seems rather certain that more detailed study will reveal that the Pernambuco specimens cited on page 327 and hereinafter under this name will prove to be distinct from the southern Brazilian specimens which typify the species. The Pernambuco form inhabits thickets and blooms in July.

Additional citations: BRAZIL: Pernambuco: Pickel 3042 (Ba, I, N--2, W); Minas Geraes: Schenck 3310 (B, Z--photo); Paraná: Dusén 9701 (Z--photo), 10,541 (A--photo of type, B--isotype, B--photo of type, Cb--isotype, D--isotype, D--photo of type, E--isotype, F--photo of type, G--isotype, G--photo of type, K--isotype, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type), 16,238 (Cb, D, E, G, K, N--photo, Z--photo), s.n. [May 5, 1911?] (Z--photo); Jönsson 403a (A--photo, B, B--photo, D--photo, F--photo, G--photo, K--photo, N--photo, P--photo, W, W--photo, Z--2 photos); State undetermined: Sellow 5091 (B, Bm, Z--2 photos).

9. AEGIPHILA CUNEATA Moldenke.

Additional citations: PERU: Loreto: Killip & Smith 28,379 (N--photo, Z--photo), 28,386 (A--photo of isotype, B--photo of isotype, D--photo of isotype, G--photo of isotype, K--photo of isotype, N--photo of isotype, P--photo of isotype, W--photo of isotype, Z--photo of isotype). BRAZIL: Acre Territory: Ule 9859 (K, Le, N).

41. AEGIPHILA DENTATA Moldenke.

Additional citations: BRAZIL: São Paulo: Edwall s.n. [Herv. Geogr. e Geol. 4362; Inst. Biol. 15,614] (G--photo of type, N--photo of type, W--photo of type, Z--photo of type).

117. AEGIPHILA DEPPEANA Steud.

A specimen of this species was determined as "Callicarpa sp. nov." by Pavon and another was identified as Buddleia by Galeotti. Linnaeus had a specimen of A. Deppeana in his herbarium. It is filed under the genus Clerodendrum and is sheet number 9 in that folder. It is unnamed and bears no inscriptions on its front side except the number of the sheet. On the reverse side we find in Linnaeus' own handwriting (the identity of the handwriting verified by Dr. Savage!) "Clerodendrum" and then in darker ink and with a heavier pen (but also by Linnaeus, according to Dr. Savage) "No. 8 a Millero" and in the former light ink and fine pen "Cal. amplius 4 fidus obtusus. Cor. 4 fidus. Stam. 4 longiss. Stylus capillaris semi-bifidus." The specimen was probably collected for Linnaeus in the Chelsea Garden, although Miller may have received it from a correspondent or the "No. 8 a Millero" might even mean that sheet number 8 was from Miller. -- The Von Rohr 97 cited below is inscribed "West Indies", but this is certainly erroneous!

Additional citations: MEXICO: Tamaulipas: Schiede 1165 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, W--photo of type, Z--2 photos of type), s.n. [Estero, Jan. 29] (Bm); Schiede & Deppe 259 (Z--photo); Nayarit: Maltby 107 (W), s.n. [Tres Marias Isls.] (Z--photo); E. W. Nelson 4245 (N--photo, Z--photo), 4254 (Z--photo); Hidalgo: Liebmann 11,302 (Op), 11,303 (Op); Veracruz: Gouin s.n. [1867] (P--2); Hahn s.n. [Medelli] (K, P--2); Liebmann 11,936 (Op); Orcutt 3057 (F), 3418 (F); Edw. Palmer 464 (K, Z--2 photos); Seler & Seler 3734 (B); Nawra 614 (V); Oaxaca: Galeotti 1268 (P); Chiapas: Seler & Seler 2005 (B, N--photo, Z--photo); State undetermined: Herb. Pavon s.n. (Bm--2); Kerber 305 (X); Liebmann 11,937 (Op); Pavon s.n. [Nueva España] (Z--photo); Sartorius s.n. (Z--photo); Von Rohr 97 (Bm). COSTA RICA: Guanacaste: Standley & Valerio 46,358 (B--photo, D--photo, G--photo, N--2 photos, W--photo, Z--photo); San José: Orsted 11,179 (Op) (a); Department undetermined: Orsted

11,180 (Cp). PANAMA: Chiriquí: Wagner s.n. [Herb. Monac. 1007] (Mu); Veraguas: Seemann 1202 (Bm, K). COLOMBIA: Magdalena: Allen 150 (Z--photo); Bertero s.n. (Do); H. H. Smith 881 (Bm, Br, Cb--2, E, Ed, K, Le, N, N--photo, P, Ut, Z--photo), 1864 (Bm, Br, Cb, E, Ed, K, Le, P, Ut, Z--photo) (b); Bolívar: Pennell 4543a (Z--photo). FRENCH GUIANA: Von Rohr s.n. (Cp--2). CULTIVATED: England: P. Miller 8 (Ls). LOCALITY OF COLLECTION UNDETERMINED: Ryan s.n. (Cp).

124. AEGIPHILA ELATA Sw.

This binomial is sometimes accredited to "Sch." and occurs written "Aegiphylla elata Sw." The species has been collected in fruit in April; it inhabits roadsides and thickets, and its vernacular name in Cuba is "guauro". Schipp says that it is a "fairly large bush of spreading habit; fls. yellow, slightly perfumed; common in secondary forests. June". It is said to be cultivated in Cuba [J. G. Jack, Buenos Aires, 1930] (2). The Galeotti 7238 mentioned by Turczaninow (3) as possibly representing his A. virgata has now been examined and is definitely A. elata. In the Linnean Herbarium sheet number 8 under Clerodendrum is A. elata. It is unnamed, but bears notations in Limaesius' own handwriting (verified by Dr. Savage!) "Knoxia ? scandens" and also "Knoxia 2 Browne 140. t.3.f.3."

Additional citations: CUBA: Pinar del Río: Ekman 12,959 (B); Roig 1203 (Es); Havana: Acuña s.n. [Herb. Roig 4232] (Es); Santa Clara: Britton & Britton 5086 (N--photo, Z--photo); Jack 7029 (A, K, P, W); Oriente: Ekman 2031 (B, B--photo, D--photo, N--photo, W--photo), 6116 (B, S); Hioram & Maurel 4799 (Z--photo); N. Taylor 414 (Z--photo); C. Wright 429 (Br, Cb--2, E, G, K--2, Os, P, Z--photo), 1354 (B, Cb, E, K--2, P); Province undetermined: G. Don s.n. (B); Eggers 5184 (B, K, Vu), 5184b (B); Linden 1798 (B, Bm, Cb, K); Sagra 360 (Bm). CAYMAN ISLANDS: Fawcitt s.n. [May, 1888] (K); A. S. Hitchcock s.n. [Grand Cayman, 1-17-'91] (E--3); C. F. Millsbaugh 1281 (B, N--photo, Z--photo); Rothrock 158 (B). JAMAICA: R. O. Alexander s.n. [Moneague] (K--3), s.n. (Z--photo); Bertero 2104 (B), s.n. [S. D.; Herb. Monac. 1019] (Mu); E. G. Britton 2952 (Z--photo); N. L. Britton 3408 (N); Britton & Harris 10,726 (Z--photo); Britton & Hollick 2693 (N); Chrysler 1636 (Ru--2); Dancer s.n. (Cb); W. Harris 6064 (B, Bg, Bm), 10,021 (B, Bm, K, P), 11,082 (Bm), 11,746 (Bm, E, K), s.n. [7.XI.95] (Ol); Hart s.n. (B--photo, D--photo, G--photo, N--photo, W--photo, Z--photo); Herb. Ventenat s.n. (Cb); A. S. Hitchcock s.n. (E); W. Hooker s.n. [1843] (K); March 972 (K), 1461 (K); Masson s.n. (Bm); Maxon 8820 (Z--photo); McFadyen s.n. (K, P); Nichols 75 (E, Os, Z--photo); J. R. Perkins 1271 (K); Purdie s.n. (K, Le, P, Ut); Rehder s.n. (A); Swartz s.n. (Bm--

isotype, Cb--isotype, Dc--isotype, N--photo of isotype, S--3 isotypes, Z--photo of type & 4 photos of isotypes); W. J. Thompson 6493 (B), 8012 (B); Wiles s.n. (Cb); N. Wilson 224 (B), s.n. [Jamaica] (P--2); W. Wright s.n. (Bm, Cb, K); Wullschlägel 974 [Herb. Monac. 1017] (Mu), 1364 [Herb. Monac. 1018] (Mu). HISPANIOLA: Haïti: Bertero 35, in part (E, P), s.n. (Dc); Deschisau s.n. [Herb. Jussieu 5035a] (P); Desportes s.n. [Herb. Jussieu 5035b & 5041] (P--2); Ekman H.5151 (B); Leonard & Leonard 13,072 (A, W); Nash 232 (K); Dominican Republic: Abbott 1368 (B, Z--photo), 2386 (B, Z--photo); Eggers 1602 [Herb. Monac. 3833] (B, Bm, Cb--3, K, Le, Mu, Vu), 1602b (B), 1602c (B); Ekman H.12,310 (B, N, S), H.13,279 (B, S, W). PORTO RICO: Plee s.n. (P). MARTINIQUE: Collector undesignated s.n. [Hb. Portenschlag] (Z--photo). TRINIDAD: W. E. Broadway 3334 (B); Trin. Bot. Gard. Herb. 2384 (R, Z--photo), 2387 (Z--photo). MEXICO: Oaxaca: Galeotti 7238 (Cb, N--photo, P); Tabasco: Rovirosa 421 (Z--photo); State undetermined: Hahn s.n. [Potrero] (P). GUATEMALA: Alta Verapaz: Türkheim 7961 (K, W, Z--photo); Izabal: P. C. Standley 24,684 (Z--photo). HONDURAS: Santa Bárbara: Thieme 5412 (K); Yoro: P. Wilson 656 (N, Z--photo); Atlántida: P. C. Standley 53,746 (Z--photo), 53,758 (Z--photo), 55,166 (Z--2 photos); Yunker 4749 (F, Mi). BRITISH HONDURAS: Burns 10 (F); Schipp 216 (B, Bm, Ca, Cb--2, E, F, J, K, Mi, S, W). COSTA RICA: Puntarenas: H. Pittier 6782 (Br, X), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 12,017] (B, Z--photo); Pittier & Tonduz 6782 (X--3); Tonduz s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 6782] (B, Br). PANAMA: Panamá: R. S. Williams 829 (W, Z--photo). COLOMBIA: Magdalena: Goudot s.n. (P--2); El Valle: Lehmann 8410 (B, F, K); Cundinamarca: Triana 2081 (Bm, Cb), 3713, in part (Bm). VENEZUELA: Carabobo: H. Pittier 8806a (Cb, G); Suringar s.n. [Puerto Cabello] (Le); Aragua: Fendler 2373 (Z--photo); State undetermined: Moritz 973 (Bm), 1478 (Bm). BRITISH GUIANA: De la Cruz 3320 (Ca, E, Z--2 photos). SURINAM: Fooke 297 (Ut), 396 (Le); Samuels s.n. [Forest of Zandery] (Z--photo). FRENCH GUIANA: W. E. Broadway 421 (Z--photo); Von Rohr s.n. (Cp--2). BOLIVIA: Santa Cruz: Steinbach 3259 ? (Z--photo). CULTIVATED: Florida: Buswell s.n. [Gov't. Grounds, July 22, 1934] (Bu, N); Austria: Cult. Hort. Schönb. s.n. (Z--photo). ILLUSTRATIONS: Bot. Reg. 11: t. 946 1826 (B).

121. AEGIPHILA ELEGANS Moldenke.

Specimens of this species have been found in herbaria misidentified as Cordia pubescens Willd.

Additional citations: PERU: Loreto: Killip & Smith 27,055 (A--photo of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--photo of

isotype, N--photo of type & photo of isotype, P--photo of isotype, S--photo of isotype, W--photo of isotype, Z--photo of type & photo of isotype), 27,562 (B, Z--photo), 27,991 (G, Z--photo); Ule 6239 (K); Junin: Killip & Smith 26,338 (N--photo, Z--3 photos). BOLIVIA: La Paz: Ule 9718 (K).

101. *AEGIPHILA ELONGATA* Moldenke.

Additional citations: BOLIVIA: La Paz: Buchtien 1645 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, W--photo of type, Z--photo of type & photo of isotype).

61. *AEGIPHILA FALCATA* Donn. Sm.

A vernacular name for this species in Costa Rica is "zorrillo".

Additional citations: MEXICO: Chiapas: Purpus 6982 (Ca), 7521 (Ca). GUATEMALA: Quezaltenango: Tonduz & Rojas 148 (Z--photo); Retalhuleu: Rojas 584 (W); J. D. Smith 1479 [Herb. Monac. 1724] (A--photo, B--photo, D--photo, F--photo, K, Mu, N--photo, P--photo, S--photo, W, W--photo, Z--3 photos); Escuintla: J. D. Smith 2111 (A--photo of type, B--photo of type, Ob--isotype, D--photo of type, F--photo of type, G--photo of type, K--isotype, N--fragment of isotype, N--photo of type & 2 photos of isotypes, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & 2 photos of isotypes). COSTA RICA: Limón: Biolley 7409 (Br--2); Cartago: H. Pittier 11,244 (K), 13,216 (K, W, X--2). PANAMA: Bocas del Toro: H. Pittier 8643 (Br, Z--photo); Tonduz 8627 (Br--2), 9292 (Br--2, W), 9293 (Br--2, W, Z--photo), 9295b (X--2).

15. *AEGIPHILA FASCICULATA* Donn. Sm.

The "*Aegiphila fasciculata* Donn. Sm." which Standley describes in Field Mus. Pub. Bot. 10: 334--335 (1931) and illustrates on plate 57 is *Dermatocalyx parviflorus* Griseb. and the J. A. Stevenson 83 [Mus. Yale School of Forestry 14,490] distributed by him under this name is also *Dermatocalyx parviflorus*, a member of the *Scrophulariaceae*.

Additional citations: GUATEMALA: Alta Verapaz: Türkheim 4013 [Herb. Monac. 4297 & 4298] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, Mu--2 isotypes, N--photo of type & photo of isotype, P--photo of type, S--photo of type, W--isotype, W--photo of type, Z--photo of type & photo of isotype).

114. *AEGIPHILA FENDLERI* Moldenke.

Additional citations: VENEZUELA: Aragua: Fendler 2032 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type & 2 photos

of isotypes, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & 2 photos of isotypes).

31. AEGIPHILA FERRUGINEA Hayek & Spruce.

It seems rather certain that the Spruce 9473 originally cited by Hayek as the type collection of this species, is a typographical error for 5473 and that the specimens of this number cited by me as "cotypes" ought to be referred to as "type" and "isotypes".

Additional citations: ECUADOR: Carchi: Mexia 7446 (N); Imbabura: Lehmann 4700 (B--2, B--photo, K, N--photo, Z--photo); Pichincha: Firmin 632 (A--photo, B--photo, D--photo, F--photo, N--photo, S--photo, W--photo, Z--photo); Sodiro 125/22 (B, N--photo, Z--photo); Spruce 5473 (A--photo of cotype, B--photo of cotype, Bm--cotype, Cb--cotype, Cp--cotype, D--photo of cotype, Ed--cotype, F--cotype, F--photo of cotype, G--photo of cotype, K--cotype, N--photo of cotype, P--cotype, S--photo of cotype, V--cotype, W--photo of cotype, Z--3 photos of cotypes), s.n. [Aug. 1858] (K). LOCALITY OF COLLECTION UNDETERMINED: Herb. Pierre s.n. (P).

63. AEGIPHILA FILIPES Mart. & Schau.

This species has been confused with Cordia bifurcata Roem. & Schult. and some herbarium specimens have been so identified! The binomial sometimes occurs accredited merely to Martius. The cotype collection cited below has been referred to as "Martius 1620", in error. The "L. Williams 3146" cited for this species on page 477 is an error and should be deleted.

Additional citations: PANAMA: Panamá: P. C. Standley 26,853 (N--photo, Z--photo). COLOMBIA: Magdalena: H. H. Smith 1831 (Bm, Br, Cb--2, E, Ed, K, Le, N, N--photo, P, Ut, Z--6 photos). PERU: Loreto: Killip & Smith 26,882 (N, W); Raimondi 578 (B), 981 (B); Tessmann 3705 (Cb, Hb); L. Williams 8190 (N--photo, Z--photo). BRAZIL: Amazonas: Ducke 6735 (A--photo, B--photo, Bm, Cb, D--photo, F--photo, G--photo, N--photo, W--photo, Z--photo); Krukoff 5125 (B, Cb, K, N--2, S); Spruce 1761 (Bm, Br, Cb, Ed, F, K, N--photo, P, Z--7 photos); Ule 5686 (Cb, K, Z--photo); Pará: Martius s.n. [Sylvia secus Amazon, Pará; Herb. Monac. 1020 & 1689; Macbride photos 20,350] (G--photo of cotype, Mu--2 cotypes), s.n. [Prov. Paraënsis; Herb. Monac. 1021 & 1022] (Mu--2); Acre Territory: Ule 8293 (B), 9723 (B). BOLIVIA: El Beni: H. H. Rusby 2472 (N--2 photos, Z--2 photos).

66. AEGIPHILA FLORIBUNDA Moritz & Moldenke.

Additional citations: VENEZUELA: Aragua: Fendler 845 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type & 2 photos of

isotypes, S--photo of type, W--photo of type, Z--photo of type & 2 photos of isotypes); Karsten s.n. (V); Moritz 1765 (Bm, N--photo, Ol, V--3, Z--3 photos).

28. AEGIPHILA FLUMINENSIS Vell.

This specific name is sometimes written with a capital initial letter. Gardner notes: "Sometimes all the bracts fall off when the persistent calyces are all reflected [reflexed]. Is this when the umbels consist wholly of flowers?"

Additional citations: BRAZIL: Bahia: Blanchet 682 (Bm, Cb), 1603 (Cb, F), 1740 (Cb--3, P), s.n. [1834] (Bm, Cb); Guillot s.n. [Bahia] (Z--photo); Rio de Janeiro: Burchell 1225 (K, N--photo, Z--photo); Chamberlain s.n. [25 Juli 1817; Herb. Monac. 1023] (Mu); Collector undesignated s.n. (Cb); G. Gardner 5574 (Bm, K, N--photo, Z--2 photos); Gaudichaud 468, in part (P); Glaziou 806 (Br--2, Cp, P), 3067 (Br--2, Cb, P); Guillemin 248 (Cb, Dc, Z--photo); Lhotzky s.n. (N--photo, Z--photo); Luschnath s.n. [Brasilia] (E), s.n. (B); Martius 1039 [Herb. Boas 1113] (Br, Dc), 1112 [Herb. Monac. 1024] (Mu); Miers 3191 (Cb, K), s.n. [Laranjeira] (Bm), s.n. [Tejuco] (Bm); Mikan s.n. [Aquoduit] (Z--photo); Pohl s.n. [Rio de Janeiro] (Br); Riedel 0,40 (L--2); Riedel & Luschnath 323 (L--3); Saint-Hilaire A. 361 (P), A¹. 663 (P), A¹. 665 (P); Schwacke 5381 (Cb); Sellow 36 (B); United States Exploring Exped. [Wilkes] s.n. [Rio de Janeiro] (Z--photo); Von Seneloh 139 (B); Warming s.n. [Juli 1866] (Cp--2), s.n. [Ad Rio de Janeiro] (Bm); Weddell 40 (P), 95 (P); Widgren 661 (Z--photo); Paraná: Dusen 8405 (A--photo, B, B--photo, D--photo, F--photo, G--photo, N--photo, W--photo, Z--photo); State undetermined: Collector undesignated 285 (P), s.n. (Br, K); Herb. Martius s.n. (Br); Luschnath s.n. [Capocabona] (Br); Sellow s.n. [Brasilia] (B).

57. AEGIPHILA FOETIDA Sw.

Aegiphila pubescens W. Wright, in herb. [not A. pubescens Willd., 1840].

Additional citations: JAMAICA: R. C. Alexander s.n. [Jamaica, 1850] (B--3, B--photo, D--photo, E, F--photo, G, N, N--2 photos, P--photo, W, W--photo, Z--4 photos), s.n. [Pleasant Valley, Moneague, 10 Apr. 1850] (K); Distin s.n. (K); March 1411 (B, K); Purdie s.n. [Mt. Diablo, April, 1844] (K); Swartz s.n. [Jamaica] (A--photo of type, B--photo of type, Bm--isotype, Cp--isotype, D--photo of type, Dc--isotype, F--photo of type, G--photo of type, N--photo of type & photo of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & photo of isotype); W. Wright s.n. (Bm).

68. AEGIPHILA GLABRATA Moldenke.

Additional citations: PERU: Junín: Killip & Smith 25,503 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type & photo of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & photo of isotype).

62. AEGIPHILA GLANDULIFERA Moldenke.

Haught describes this species as a small tree with pendent inflorescences and says it is "not rare". He also states that "The entire plant is strongly aromatic". Klug says "Shrub 2 m. tall; fls. cream; blooms in April" and reports the vernacular name in Peru "chirapa sachá".

Additional citations: COSTA RICA: Alajuela: Brenes s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 14,484] (B, K); Hoffmann 826 (B--2, K, N--photo, Z--photo). PANAMA: Canal Zone: Hayes 74 (N--photo, Z--photo), 145 (Z--photo), 253 (N--photo, Z--photo), 269 (Bm, K); H. Pittier 6519 (G, K, Z--photo); Province undetermined: Hayes s.n. [Dec. 7] (Ed); Seemann 335 (Bm). COLOMBIA: Santander Sur: Dawe 472 (K--isotype, N--photo of type & photo of isotype, S--photo of type & photo of isotype, W--photo of type & photo of isotype, Z--photo of type & photo of isotype); Haught 1629 (N, W); Pennell 3865 (N--photo, Z--photo); Tolima: Goudot s.n. [Ibagué] (Z--2 photos); Antioquia: Woronow & Juzepczuk 4433 (Z--photo). ECUADOR: Napo-Pastaza: Diels 942 (B--2). PERU: Loreto: Klug 3016 (A, B, Cb, K, N); Tessmann 3508 (Hb). BRAZIL: Amazonas: Poeppig 2760 (N--photo, Z--photo).

62a. AEGIPHILA GLANDULIFERA var. PARAENSIS Moldenke.

Additional citations: BRAZIL: Pará: Burchell 10,060 (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, S--photo, W--photo, Z--photo); Killip & Smith 30,661 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, S--photo of type, W--photo of type, Z--photo of type & photo of isotype); Krukoff 5923 (N, S); Moss s.n. [1919] (Bm).

62b. AEGIPHILA GLANDULIFERA var. PYRAMIDATA L. C. Rich. & Moldenke, var. nov.

Haec varietas a forma speciei typica recedit ramulis pedunculisque rhachideque inflorescentiarum ramisque pedicellis petiolisque dense strigillosis vel breviter strigosis, pilis adpressis, foliorum laminis subtus et calyce leviter strigillosis, et costa supra minute strigillosa.

This variety differs from the typical form of the species in that its branchlets, peduncles, rachis, branches of the inflorescence, pedicels, and petioles are densely strigillose or short-strigose with appressed antrorse buff-colored

hairs, the calyx and lower leaf-surface are lightly so, and the midrib above minutely so.

The type of this variety was collected by Louis Claude Richard in Pará, Brazil, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle in Paris. The collector has inscribed the following notes on the label of the type specimen: "Aegiphila pyramidata. Caulis fruticosum -- ramis debilibus, propendentibus, pubescentibus. Flores sublutescentes in racemum amplum terminalem pyramidatum. Fructus luteo-rubentes 4-loculare. In vixit fluvii Pará". The Venezuelan vernacular name of "tabaquero" has been recorded by Moritz.

COLOMBIA: Méta: Triana 3713, in part (Bm), VENEZUELA: State undetermined: Moritz 364 (B, Bm). FRENCH GUIANA: Sagot 473, in part (Bm). BRAZIL: Pará: L. C. Richard s.n. (N--photo of type, P--type, Z--photo of type).

17. AEGIPHILA GLEASONII Moldenke.

Additional citations: BRITISH GUIANA: Gleason 237 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--2 photos of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

108. AEGIPHILA GLOMERATA Benth.

Additional citations: ECUADOR: Manabi: Barclay 632 (Bm); Eggers 15,088 (N--photo, Z--photo), 15,827 [Herb. Monac. 3706] (A--photo, B--photo, D--photo, F--photo, G--photo, Le, Mi, N--2 photos, P--2, S--photo, W--photo, Z--2 photos); Sinclair s.n. [Salango Isl.] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

116. AEGIPHILA GLORIOSA Moldenke.

The species has been confused by some with the genus Vitex. It seems fairly certain that the "1398" on the label of the type specimen is an error for "1998" and that all the specimens of the latter number ought to be regarded as isotypes.

Additional citations: BRAZIL: Bahia: Blanchet 1398 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, S--photo of type, W--photo of type, Z--photo of type), 1998 (Bm, Cb--2, F, N--fragment); Riedel 781 (L, Z--2 photos). ILLUSTRATION: Line-drawing (N).

32. AEGIPHILA GOELDIANA Huber & Moldenke.

Additional citations: BRAZIL: Pará: Goeldi 8166 (A--photo

of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--photo of isotype, N--photo of isotype, P--photo of isotype, S--photo of isotype, W--photo of isotype, Z--photo of isotype).

2. AEGIPHILA GOUDOTIANA Moldenke.

Additional citations: COLOMBIA: Cundinamarca: Goudot s.n. [Pandi] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

4. AEGIPHILA GRANDIS Moldenke.

On page 473 Goudot s.n. [Bogotá] is cited as A. Goudotiana. This was due to a typographical error. The specimen is A. grandis. The cheironym "Aegiphila guyanensis Moldenke" occurs on some herbarium specimens, but was never proposed for this species by me! It is not at all the true A. guianensis Moldenke, q. v.

Additional citations: COLOMBIA: Cundinamarca: Goudot s.n. [Bogotá] (A--photo, B--photo, D--photo, F--photo, G--photo, P, S--photo, W--photo, Z--2 photos); Mutis 3657 (S), 4554 (B--photo, Cb, F--photo, G--photo, K, N--photo, S, Z--photo); Triana 2080 (Cb, N--photo, Z--photo), 3712 (Bm), s. n. (W); Tolima: Goudot s.n. [Portachuelo, Quindiu] (B--photo of type, G--photo of type, N--photo of type & photo of isotype, S--photo of type, Z--photo of type & photo of isotype).

19. AEGIPHILA GRAVEOLENS Mart. & Schau.

Aegiphila tetragona Mart., in herb. -- A specimen of Martius 1934 at Munich bears the annotation "Stigmatococca" in a very old handwriting, probably that of Martius, and a note in Latin that the specimen probably represents a new genus in the Rubiaceae or else in the Solanaceae related to Cestrum. A generic description in Latin is appended. Stigmatococca Willd. [ex Schult. Mant. 3: 55. 1827] is a genus of doubtful systematic position [see Benth. & Hook. f. Gen. Pl. 2: 888], but is typified by S. solanacea Willd. (l.c.) with alternate leaves and terminal inflorescences, apparently quite a different thing from Martius' proposed genus of the same name. -- The Sellow 608 cited on page 305 as having been collected in São Paulo was actually collected in Bahia [the label at Kew reads "Vittoria - Bahia"]. The Blanchet 3451 cited below is undoubtedly typical of the species. The material examined for my monograph and therein described [pages 304--305] is apparently not typical and ought probably be given a varietal designation at least. On the basis of the new Blanchet material, the specific description as given in my monograph ought to be modified in

the following respects: petioles to 1 cm. long, very weak, often collapsing in drying; blades elliptic, 9.5--21 cm. long, 3--6.6 cm. wide; secondaries to 14 per side; veinlet reticulation obscure above, not at all prominent beneath; cymes to 5 cm. long; peduncles to 2 cm. long; pedicels in anthesis to 18 mm. long; calyx in anthesis sometimes to 5 mm. long and 6 mm. wide, often densely pulverulent-punctate; filaments 1 mm. long; style 2--3 mm. long; stigma branches 1.5 mm. long.

Additional citations: BRAZIL: Bahia: Blanchet 231 (P, V), 3451 (B, C, Cb--2, N--fragment, N--photo), 3651 (Br, N--photo, V, Z--2 photos); Martius 1934 [Herb. Monac. 1091 & 1692] (Mu--2); Riedel 221 (L--2, N--fragment); Sellow 608 (B, B--photo, K, N--photo, Z--2 photos); Rio de Janeiro: Martius 120 [Herb. Monac. 1025 & 1027] (Mu--2), s.n. [Herb. Monac. 1026] (Mu); Miers s.n. [Barra de Iguassu] (Bm); Riedel & Luschnath 1473 (L--2); São Paulo: Burchell 5019 (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, S--photo, W--photo, Z--photo); Gehrt s.n. [Herb. Instit. Biol. S. Paulo 30,081] (K--2, N--2, Sp); Lund 796 [Macbride photos 7880] (B--photo of type, Dc--type); Sellow 802 (B, P, Z--2 photos), 878 (A--photo, B--photo, Bm, D--photo, F--photo, G--photo, N--photo, S--photo, W--photo, Z--photo); State undetermined: Sellow 9 (B--2), 2189 (Br).

43. AEGIPHILA GUIANENSIS Moldenke.

Aegiphila arborea Spruce, in herb. -- The "Aegiphila guyanensis Moldenke" which appears on some herbarium specimens is a cheironym which I did not propose, but which is apparently synonymous with A. grandis.

Additional citations: COLOMBIA: Cundinamarca: Triana 2084 (Cb--2, Z--2 photos); Méta: Karsten s.n. [Llano de San Martín, Villaviciensis] (L, N--photo, Z--photo); Triana 3713, in part [Llano de San Martín, Villaviciensis] (Bm). VENEZUELA: Amazonas: Spruce 3578 (K, N--photo, Z--photo). BRITISH GUIANA: M. R. Schomburgk 404, in part (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type & photo of isotype, S--photo of type, W--photo of type, Z--photo of type & photo of isotype). BRAZIL: Pará: Spruce 3113, in part (K).

22. AEGIPHILA HASSLERI Briq.

The "Hassler 6831" cited on page 473 is an error and should be deleted. The Sellow specimens at Berlin and cited under A. brachiata may represent A. Hassleri instead! The Niederlein 1205 and Arechavaleta B are anomalous in their almost completely glabrous leaves! They may well represent a distinct variety. Fruiting specimens from Paraguay, however, such as Fiebrig 5923, also have the leaves almost

completely glabrous!

Additional citations: BRAZIL: Paraná: Dusén 9382 (S). PARAGUAY: Anisits 122 (Z--photo); Balansa 2085 (B--2, Bm, Cb--2, P--2, Z--photo), 2085a (Cb--2, N--fragment, P); Fiebrig 260 [Herb. Monac. 4033] (B, B--photo, Bm, Cb, D--photo, Ed--3, F--photo, G--photo, K, Le, Lu, N--photo, W--photo, Z--photo), 530 (B, Cb, Ed, H--photo, Z--photo), 5923 (Z--2 photos); Hassler 1674 (K--cotype, P--cotype, Z--photo of cotype), 3193 (Bm--cotype, Cb--2 cotypes, F--cotype, K--cotype, N--fragment of cotype, N--photo of cotype, P--cotype, X--cotype, Z--2 photos of cotypes), 4271 (Bm--cotype, Z--photo of cotype), 6780 (A--photo of cotype, B--photo of cotype, Bm--cotype, Cb--cotype, D--photo of cotype, F--photo of cotype, N--2 photos of cotypes, P--cotype, W--photo of cotype, X--3 cotypes, Z--photo of cotype), 8632 (Bm, Cb--2, K, P). ARGENTINA: Misiones: Ekman 1227 (Z--photo), 1228 (N--photo, Z--photo); Niederlein 1705 (Z--photo), 1725 (Z--photo), 1732 (Z--photo), 2248 (B, Z--photo); Corrientes: Bonpland 755 (P). URUGUAY: Arechavaleta 43 (Cb--3, F, N--fragment), B (B), s.n. (Cp--2 photos); Berro 1019 (X), 5087 (X); Felippone 5082 (Z--photo). ILLUSTRATION: Lamina 1, "Rana florida en tamaño", etc. (Dr).

34a. AEGIPHILA HASTINGSIANA Moldenke, sp. nov.

Frutex vel arbor; ramulis gracilibus obtuse tetragonis densissime breviterque pubescentibus; petiolis dense breviterque pubescentibus, pilis fulvis vel ferrugineis; foliis chartaceis ellipticis breviter acuminatis, ad basin longiuscule acuminatis, supra dense puberulis vel sparse breviterque pubescentibus, subtus dense velutinis et punctatis; inflorescentiis axillaribus cymosis; pedunculis gracilibus; margine calyce valde 4-dentato; staminibus 4.

Shrub or tree; branchlets slender, obtusely tetragonal, very densely short-pubescent with fulvous or ferruginous hairs; nodes not annulate; principal internodes 2--4.8 cm. long; leaves decussate-opposite; petioles slender or stoutish, 3--7 mm. long, densely short-pubescent with fulvous or ferruginous hairs, flattened and canaliculate-margined above, convex beneath, not conspicuously ampliate at base; blades chartaceous, dark green above, lighter beneath, elliptic (or stunted ones at the base of the branchlets sometimes almost subrotund), 2.8--10.8 cm. long, 2--4.8 cm. wide, short-acuminate at apex (or rounded on stunted leaves), entire, rather long-acuminate at base, rather densely puberulent above or sparsely short-pubescent, very densely velutinous-pubescent with fulvous or ferruginous hairs beneath and there also densely punctate, marked with numerous, black, elliptic or circular, glandular disks along the midrib toward the base beneath; midrib slender or

comparatively stout, flattened or subprominent and very narrow above, rounded-prominent beneath; secondaries slender, 7--9 per side, arcuate-ascending, flattened above, prominent beneath, rather obscurely arcuate-joined in many loops near the apex; vein and veinlet reticulation obscure or indiscernible on both surfaces; inflorescence axillary, cymose; cymes solitary, opposite, 1.3--2.5 cm. long, 7--18 mm. wide, densely many-flowered, brachiate, far shorter than the subtending leaves; peduncles slender, 5--10 mm. long, densely short-pubescent with fulvous or ferruginous hairs; bracts none; pedicels obsolete; calyx campanulate, thin, light and herbaceous, 2.8--3 mm. long, 2--3.2 mm. wide, densely short-pubescent throughout outside, its rim conspicuously 4-lobed or 4-toothed, each lobe triangular, about 1 mm. long and 1.6 mm. wide at base, acute at apex; corolla infundibular, its tube cylindric, 2.4--2.8 mm. long, about 0.7 mm. wide at the middle, often slightly swollen to 1 mm. at the base and apex, glabrous throughout, its limb 4-parted, its lobes elliptic-obovate, about 2 mm. long and 1 mm. wide, obtuse at apex; stamens 4, inserted at 2 levels, one pair about 1.6 mm. and the other pair about 1.8 mm. above the base of the corolla-tube, included; filaments obsolete or very abbreviated; anthers oblong, about 0.8 mm. long and 0.4 mm. wide, 2-celled, dorsifixed near the base; style capillary, exserted, 4.8--6 mm. long, glabrous; stigma bifid, its branches about 2.3 mm. long, twisted; ovary subglobose, 0.8--1 mm. long and wide, depressed above, glabrous, 4-celled; fruiting-calyx and fruit not seen.

The type of this rare species was collected by René de Grosourdy somewhere in Guatemala in 1864 and is deposited in the herbarium of the Muséum National d'Histoire Naturelle in Paris. The species is named in honor of George Tracy Hastings, noteworthy collector in Chile, Hawaii, and the U. S.A., successful botanical educator, editor of "Torreya" since 1921, and an ardent student of Nature.

GUATEMALA: Province undetermined: Grosourdy s.n. [1864] (N--fragment of type, P--type).

-
- (a) This specimen may have been collected in Cartago or in Puntarenas. The label merely states "Inter San José et Puntarenas".
- (b) On page 452, line 41, this number is erroneously cited as "1861".
- (1) Brittonia 1: 245--477. 1934.
- (2) List Pl. Atkins Instit. Arnold Arb. 7. 1933.
- (3) Bull. Soc. Imp. Nat. Mosc. 36²: 220. 1863.
- (4) Oldfield Thomas, Proc. Zool. Soc. 1893: 242. 1893.
- (5) Natural Sci. 4: 57. 1894.
- (6) Science II, 37: 866--867. 1913.

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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I.

June, 1937

No. 6

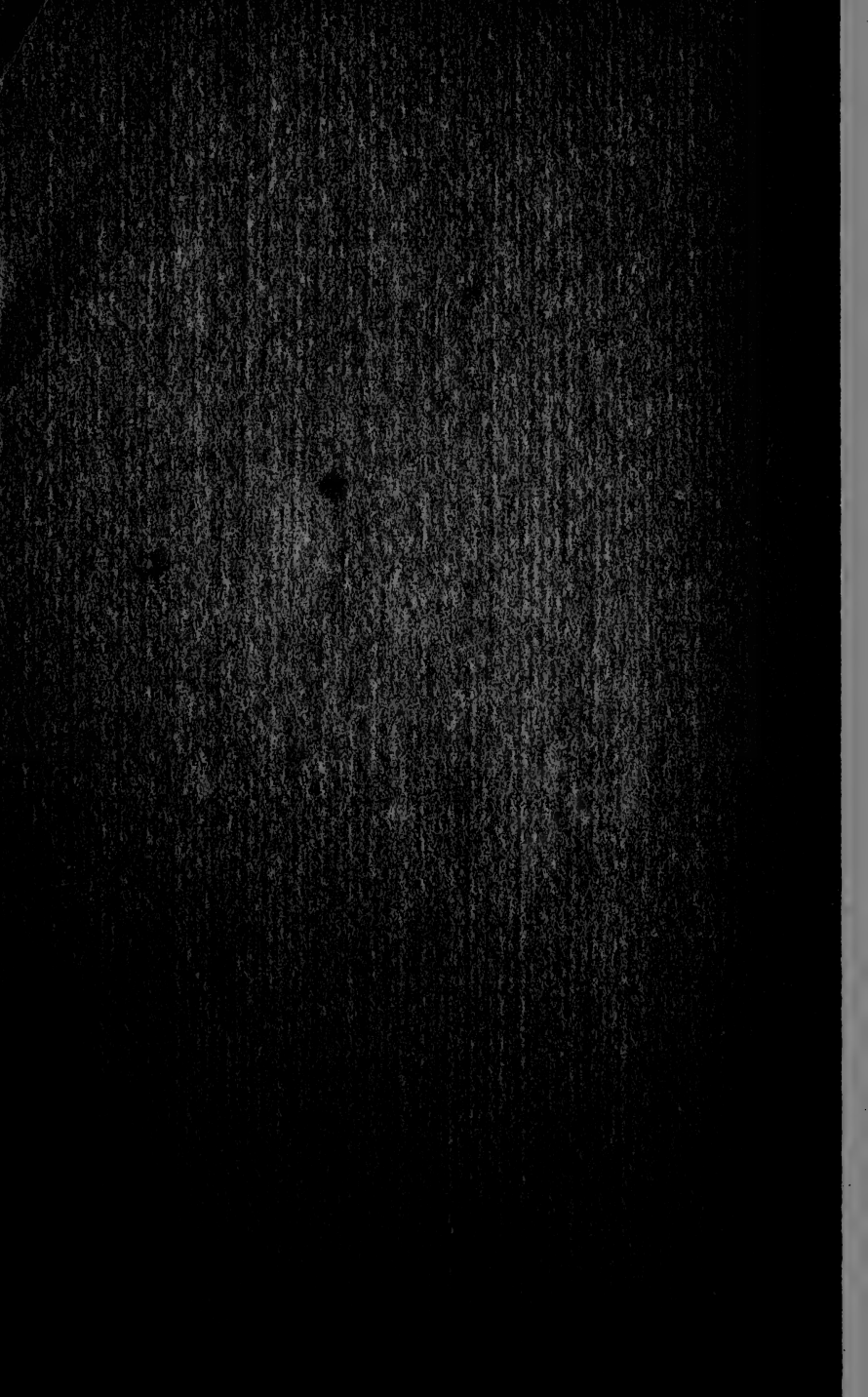
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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number: 50 cents; per volume \$5.00 in advance.

Vol. I, number 5, was issued March 1, 1937



THREE NEW SPECIES OF VACCINIACEAE

A. C. Smith

Types of the following species are deposited in the herbarium of the New York Botanical Garden, and are duplicated in the U. S. National Herbarium.

THIBAUDIA ALBIFLORA A. C. Smith, sp. nov.

Frutex scandens; ramulis elongatis glabris teretibus cinereis vel fuscescentibus; petiolis incrassatis glabris 3--4 mm. longis; laminis coriaceis oblongis vel lanceolato-oblongis, 12--22 cm. longis, 4--7 cm. latis, basi rotundatis vel obtusis, apice longe acuminatis, margine leviter revolutis, utrinque glabris, 5-plex-nerviis, nervis secundariis prope basin orientibus, cum costa supra leviter elevatis vel planis subtus prominentibus, venulis reticulatis supra obscuris subtus prominulis; inflorescentia ramulis infra folia plerumque exoriente, copiose paniculata, 25--75-flora, 8--10 cm. longa, 5--8 cm. lata, rhachide et ramulis secundariis gracilibus cinereo-puberulis; pedicellis gracilibus 9--14 mm. longis, cum bracteis et bracteolis minutis puberulis; calyce mox glabro sub anthesi 2--3 mm. longo, tubo brevi 2--3 mm. diametro basi truncato, limbo lobis late deltoideis acutis inclusis 1.5--2 mm. longo; corolla alba 8--10 mm. longa 2--3 mm. diametro, basi et apice contracta, lobis 1 mm. longis; staminibus circiter 7 mm. longis aequalibus; filamentis membranaceis connatis 3 mm. longis; antheris 5 mm. longis, tubulis latis flexilibus distinctis per rimas elongatas dehiscentibus quam loculis brevioribus; stylo filiformi, stigmatate late peltato.

Type, Ynes Mexia 6682, collected Nov. 17--20, 1934, in forest near stream, Hacienda Solento, near Santa Rosa, Canton Pajili, Province of León, Ecuador, alt. 1000 m. The pedicels are said to be clear coral red, the corollas waxy white. The occurrence of white flowers in the genus may be more frequent than generally believed, but collectors usually fail to state the color, and in a dried condition the corollas appear red.

The new species extends southward the known range of that small group of the genus with paniculate inflorescences and large leaves, comprising the Colombian T. paniculata A. C. Sm. and T. Archeri A. C. Sm. and the Costa Rican T. costaricensis Hoer. From the first of these, T. albiflora is distinguished by its shorter flowers and proportionately longer leaves, which are neither bullate nor abruptly acuminate. From the second our species differs also by its short flow-

ers and by its 5- rather than 7-nerved leaves. From T. costaricensis, perhaps its closest ally, the new species differs by having its leaves proportionately broader, its inflorescence conspicuously larger and with more numerous flowers, and its anthers with comparatively short tubules.

CAVENDISHIA MEXIAE A. C. Smith, sp. nov.

Frutex scandens; ramulis subteretibus glabris juventute striatis; petiolis subteretibus 7--10 mm. longis glabris; laminis coriaceis oblongis, 10--13 cm. longis, 4--5.5 cm. latis, basi acutis vel cuneatis, apice caudato-acuminatis (acumine 1--2 cm. longo), margine integris et anguste revolutis, utrinque glabris vel subtus parcissime nigro-setulosus, 5 (—7)-pli-nerviis, nervis secundariis supra basin orientibus, cum costa supra leviter impressis vel subplanis subtus prominentibus, venulis reticulatis supra leviter elevatis subtus immersis; inflorescentia axillari racemosa 10--14-flora ubique glabra ad 7 cm. longa, basi bracteis imbricatis oblongis papyraceis ad 3 cm. longis instructa; pedicellis rugosis 7--15 mm. longis, basi bractea eis basi rhachidis simili subtentis, prope basin bracteolas ovatas 5 mm. longas gerentibus, superne incrassatis et cum calyce articulatis; calycis tubo rugoso breviter cylindrico sub anthesi circiter 3 mm. longis et 6 mm. diametro, limbo erecto obscure glanduloso cum lobis circiter 4 mm. longis, lobis late deltoideis 1 mm. longis, praeter apicem calloso-marginatis; corolla tenuiter carnea cylindrica, 17--24 mm. longa, 4--6 mm. diametro; staminibus subaequalibus (filamentis antherisque compensanter inaequalibus), quam corolla leviter brevioribus; filamentis nigrescentibus glabris circiter 3 mm. et 6 mm. longis; loculis leviter granulatis circiter 5 mm. longis; tubulis alternatim circiter 9 mm. et 6 mm. longis, per rimas elongatas dehiscentibus; stylo filiformi corollam aequante, stigmatibus capitato.

Type, Ynes Mexia 6916, collected Feb. 18--20, 1935, on edge of dense forest near Puyo, Province of Napo-Pastaza, Ecuador, alt. 360 m. The closest ally of the new species appears to be the Colombian C. amalfiensis Mansf., which has the leaves different in texture, less obviously pli-nerved, narrower in proportion, and subcordate at base, the inflorescence shorter, and the flower proportions somewhat different.

CAVENDISHIA CONFERTIFLORA A. C. Smith, sp. nov.

Frutex; ramulis subteretibus glabris; petiolis teretibus glabris 6--9 mm. longis; laminis tenuiter coriaceis vel chartaceis, utrinque pallide viridis, oblongis vel oblongo-ellipticis, 12--16 cm. longis, 3.5--5.5 cm. latis, basi rotundatis vel minute subcordatis, apice acuminatis (acumine

angusto obtuso 7--20 mm. longo), margine leviter recurvatis, supra glabris, subtus parce et minute brunneo-pilosis vel punctatis, 5 (vel obscure 7)-pli-nerviis, nervis 5--10 mm. supra basin orientibus, supra leviter impressis vel elevatis, subtus prominentibus, venulis utrinque prominulis; inflorescentiis prope apices ramulorum in axillis foliorum caducorum solitariis, racemosis, 15--25-floris, glabris, basi bracteis deciduis instructis; rhachide robusto angulato 4--6 cm. longo; floribus confertis in axillis bractearum solitariis, bracteis chartaceis vel tenuiter coriaceis integris suborbicularibus vel late obovatis, 10--12 mm. longis, 13--14 mm. latis, margine interdum minute nigro-glanduloso-ciliatis; pedicellis teretibus apice dilatatis et saepe obliquis, sub anthesi inconspicuis, sub fructu ad 4 mm. longis, basi bibracteolatis (bracteolis chartaceis vel membranaceis ovatis vel obovatis, 4--5 mm. longis et latis, sub anthesi calycis basem amplectentibus); calyce coriaceo, sub anthesi bracteis occulto 6--8 mm. longo, tubo 4--5 mm. diametro obscure glanduloso-punctato, limbo suberecto quam tubo paullo longiore, lobis 5 oblongis margine apicem versus interdum obscure glanduloso-ciliatis, 4--5 mm. longis, 3--4 mm. latis, apice obtusis vel interdum emarginatis, marginibus basin versus anguste imbricatis; corolla carnosae cylindrico-urceolata, maturitate ad 16 mm. longa, 6--7 mm. diametro, apice ad 3 mm. contracta, lobis 5 parvis acutis; staminibus subaequalibus, filamentis ligulatis glabris distaliter contractis et nigrescentibus, alternatim circiter 2.5 et 4 mm. longis, antheris flavis, alternatim circiter 8 et 7 mm. longis, tubulis quam loculis paullo longioribus, per rimas elongatas dehiscentibus; stylo quam corolla paullo brevior, stigmate truncato; fructis juvenilibus coriaceis subglobosis calycis lobis conspicuis coronatis.

Type, A. F. Skutch 2991, collected in December, 1936, in riverside thicket in the vicinity of El General, Province of San José, Costa Rica, alt. 1560 m. The collector notes that the bracts are pink and the corollas waxy white. In a dried condition, the apex of the corollas appears much paler than the lower portion, which is hidden by bracts.

This very distinct species, in inflorescence characters, can be compared among Central American species only with C. crassifolia (Benth.) Hemsl. and another undescribed plant recently collected by Skutch, but both of these have much larger enveloping bracts, comparatively long pedicels, and entirely different calyx lobes, in addition to foliage differences. A closer ally of the new species is the Colombian C. compacta A. C. Sm., with which it has in common short pedicels and large slightly imbricate calyx lobes. The Colombian plant, however, has much larger bracts which give the inflorescence a different aspect, longer flowers, and leaves

which are proportionately broader and with more highly confluent primary nerves.

STUDIES OF MEXICAN AND CENTRAL AMERICAN PLANTS -- II (a)

C. L. Lundell

The present paper is a continuation of studies of Mexican and Central American plants based primarily on collections in the Herbarium of the University of Michigan and the Gray Herbarium. Five of the novelties described, species of Tapi-
rira, Ilex, Clusia, Bauhinia, and Erythroxylon, were collected by the writer in 1936 on the Carnegie-Michigan expedition to British Honduras.

One of the most important collections ever made in southern Mexico was received recently from Mr. Eizi Matuda. His botanical work is being concentrated in Chiapas, a state too much neglected by botanists. A number of new and noteworthy species are represented, and seven of the novelties are described herein. Probably the outstanding discovery is a new species of Podocarpus which the writer takes pleasure in naming for the collector.

PODOCARPUS MATUDAI Lundell, sp. nov.

Arbor, foliis coriaceis, lanceolatis, 4--8.5 cm. longis, 12--19 mm. latis, apice acuminatis, basi breviter angustatis; costa supra ad basin versus prominente ad apicem versus planiuscula. Amenta mascula solitaria, sessilia, cylindrica, ca. 3.3 cm. longa, 4 mm. diam., basi bracteata.

A tree; leaves coriaceous, lanceolate, 4 to 8.5 cm. long, 12 to 19 mm. wide, apex acuminate, base short-attenuate, costa prominent above near the base, becoming plane toward the apex, plane or slightly impressed beneath; staminate ament solitary, axillary, cylindrical, about 3.3 cm. long, 4 mm. in diameter, subtended at base by 6 bracts, the bracts broadly ovate or depressed ovate, cuspidate, 2 to 4.5 mm. long.

Type in the Herbarium of the University of Michigan, E. Matuda 698, collected on Mt. Pasitar, Chiapas, Mexico, December 29, 1936.

This remarkable addition to the Mexican flora is distinguished from closely related Central American species by its prominent costa and broad leaves.

COCOLOBA ESCUINTLENSIS Lundell, sp. nov.

Arbor. Ramuli glabri, striati. Folia glabra, subchartacea, lanceolata vel ovato-lanceolata, 10--26 cm. longa, 4--9 cm. lata, apice acuminata, basi rotundata vel obtusa; petiolis 1--3.2 cm. longis. Inflorescentia racemosa, subpaniculata, vel subfasciculata, axillaris vel terminalis, minute puberula, 6--14 cm. longa; nodulis 1-floris; ochreolis ca. 1 mm. longis, minute puberulis; pedicellis ochreolas duplo superantibus.

A tree; branchlets glabrous, striate; petioles striate, drying blackish, glabrous, 1 to 3.2 cm. long; leaf blades entirely glabrous, subchartaceous, broadly lanceolate or ovate-lanceolate, 10.5 to 26 cm. long, 4 to 9 cm. wide, apex acuminate, base rounded or obtuse, slightly decurrent, venation prominent on both surfaces, the lateral veins about 9 on each side; inflorescence racemose, subpaniculate, or subfasciculate, axillary and terminal, 6 to 14 cm. long, the racemes slender, striate, minutely puberulous; ochreolae tubular-campanulate, about 1 mm. long, minutely puberulous, the subtending bract slightly shorter; floral pedicels solitary, stout, glabrous, about twice as long as the ochreolae; perianth tube very short, glabrous, the lobes broadly ovate-elliptic, 2 to 3 mm. long, very minutely ciliate, reflexed at anthesis; filaments glabrous, about 2 mm. long.

Type in the Herbarium of the University of Michigan, Eizi Matuda 413, collected at Escuintla, Chiapas, Mexico, December 2, 1936.

In the subpaniculate inflorescence, the central rachis is once or twice branched near the base, forming one or two short lateral racemes.

BAUHINIA GIGAS Lundell, sp. nov.

Arbor, 40-metralis, trunco 45 cm. diam., ramulis gracilibus, glabris. Folia membranacea, ovata, 7--14.5 cm. longa, 6--12.5 cm. lata, 7-nervia, glabra, ad mediam biloba, basi cordata, lobis obtusiusculis vel acuminatis; petiolis 3--4.7 cm. longis.

An unarmed tree, 40 meters high; trunk 45 cm. in diameter; twigs slender, glabrous; stipules minute; petioles very slender, 3 to 4.7 cm. long, glabrous; leaf blades membranous, broadly ovate, 7 to 14.5 cm. long, 6 to 12.5 cm. wide, strongly 7-nerved, finely reticulate-veined on both surfaces, glabrous, dark green above, paler beneath, apex 2-lobed to below the middle, the lobes divaricate, obtusish or acuminate, base deeply cordate.

Type in the Herbarium of the University of Michigan, O. L. Lundell 6298, collected in advanced forest on top of limestone hill at Valentin, El Cayo District, British Honduras, June 29, 1936.

B. gigas is frequent in forests on the limestone hills at Valentin, and may be considered important ecologically. It is distinct from the few other North American species of similar habit. Unfortunately only sterile material was obtainable.

The writer interprets Bauhinia and Cassia in the broader sense, hence the following nomenclatorial changes are necessary.

BAUHINIA CALDERONII (Rose) Lundell, comb. nov.

Casparea Calderonii Rose, N. Amer. Fl. 23: 217. 1930.

BAUHINIA CONGESTA (Britt. & Rose) Lundell, comb. nov.

Casparea congesta Britt. & Rose, N. Amer. Fl. 23: 211.
1930.

BAUHINIA JERMYANA (Britt.) Lundell, comb. nov.

Casparea Jermyana Britton, N. Amer. Fl. 23: 211. 1930.

BAUHINIA MONANTHA (Britt. & Rose) Lundell, comb. nov.

Casparea monantha Britt. & Rose, N. Amer. Fl. 23: 210.
1930.

BAUHINIA PURPUSII (Britt.) Lundell, comb. nov.

Casparea Purpusii Britton, N. Amer. Fl. 23: 210. 1930.

CASSIA BRITTONIANA Lundell, nom. nov.

Chamaefistula chiapensis Britt. & Rose, N. Amer. Fl. 23:
238. 1930.

CASSIA COBANENSIS (Britt.) Lundell, comb. nov.

Vogelocassia cobanensis Britton, N. Amer. Fl. 23: 259.
1930.

CASSIA COMAYAGUANA (Britt. & Rose) Lundell, comb. nov.

Chamaecrista comayaguana Britt. & Rose, N. Amer. Fl. 23:
291. 1930.

CASSIA DOYLEI (Britt. & Rose) Lundell, comb. nov.

Peiraniais Doylei Britt. & Rose, N. Amer. Fl. 23: 265.
1930.

CASSIA FENIXENSIS (Britt. & Rose) Lundell, comb. nov.

Chamaecrista fenixensis Britt. & Rose, N. Amer. Fl. 23:
291. 1930.

CASSIA LONGIROSTRATA (Britt. & Rose) Lundell, comb. nov.

Peiraniais longirostrata Britt. & Rose, N. Amer. Fl. 23:

264. 1930.

CASSIA MAYANA Lundell, nom. nov.

Chamaecrista Tonduzii Britt. & Rose, N. Amer. Fl. 23:
290. 1930.

CASSIA YUCATANA (Britt. & Rose) Lundell, comb. nov.

Chamaecrista yucatana Britt. & Rose, N. Amer. Fl. 23:
287. 1930.

CASSIA MONSERRATENSIS Lundell, nom. nov.

Chamaecrista chiapensis Britt. & Rose, N. Amer. Fl. 23:
284. 1930.

CASSIA PINOI (Britt. & Rose) Lundell, comb. nov.

Chamaecrista Pinoi Britt. & Rose, N. Amer. Fl. 23: 283.
1930.

CASSIA SELERI (Rose) Lundell, comb. nov.

Chamaecrista Seleri Rose, N. Amer. Fl. 23: 287. 1930.

CASSIA SIMULANS (Britt. & Rose) Lundell, comb. nov.

Peiraniasia simulans Britt. & Rose, N. Amer. Fl. 23: 266.
1930.

CASSIA STENOCARPOIDES (Britt.) Lundell, comb. nov.

Chamaecrista stenocarpoides Britton, N. Amer. Fl. 23:
293. 1930.

CASSIA SUBMONTANA (Britt. & Rose) Lundell, comb. nov.

Adiptera submontana Britt. & Rose, N. Amer. Fl. 23: 241.
1930.

CASSIA VILLOSISSIMA (Britt. & Rose) Lundell, comb. nov.

Chamaecrista villosissima Britt. & Rose, N. Amer. Fl.
23: 290. 1930.

CASSIA XANTHOPHYLLA (Britt. & Rose) Lundell, comb. nov.

Isandrina xanthophylla Britt. & Rose, N. Amer. Fl. 23:
269. 1930.

ERYTHROXYLON BELIZENSE Lundell, sp. nov.

Frutex 2 m. alt., ramulis compressis. Folia chartacea, elliptica, 3--6 cm. longa, 1.8--3.1 cm. lata, apice obtusa vel emarginata, basi obtusiuscula; petiolis 3--5 mm. longis; stipulis persistentibus, triangulatis, 3.5--4 mm. longis, 3-striatis, apice 3 (--5)-setulosi. Pedicelli fructiferi 8--10 mm. longi. Drupa oblongo-ovata, acuta, ca. 13 mm. longa, 5--6 mm. diam.

A shrub 2 meters high; twigs brown, somewhat compressed; stipules persistent, broadly triangular, 3.5 to 4 mm. long, 3-ribbed, the apex 3 (--5)-setulose; petioles slender, canaliculate, 3 to 5 mm. long; leaf blades chartaceous, elliptic, 3 to 6 cm. long, 1.8 to 3.1 cm. wide, apex obtuse or slightly emarginate, base obtusish, dark green and lustrous above, paler green beneath, costa reddish and prominent beneath, finely reticulate-veined on both surfaces; fruiting pedicels 1 to 3 in the axils, slender at base, enlarged toward apex, ribbed, 8 to 10 mm. long; fruiting calyx deeply 5-lobed, the lobes ovate-triangular, acute, splitting to length of 1.6 mm.; drupes oblong-ovate, dark red, about 13 mm. long, 5 to 6 mm. in diameter, apex acute, oblique.

Type in the Herbarium of the University of Michigan, C. L. Lundell 6810, collected in open secondary forest on top of limestone hill at San Agustín, Mountain Pine Ridge, El Cayo District, British Honduras, August 6, 1936.

Apparently closely related to E. rufum Cav. from which it most obviously differs in size of leaves, length of fruiting pedicels, and size of drupes.

TAPIRIRA MACROPHYLLA Lundell, sp. nov.

Arbor 25 m. alta. Folia magna, glabra, 26--44 cm. longa; foliolis 6 vel 7, subcoriaceis, oblongis vel elliptico-lanceolatis, 8--21 cm. longis, 3.5--7 cm. latis, apice breviter acuminatis vel acutiusculis, basi acutis. Paniculae 4.5--12 cm. longae. Drupa ovoidea, 2.3--2.8 cm. longa, obliqua, truncata.

A tree, 25 meters high; trunk 30 cm. in diameter; bark thin, black; tips of branchlets thick, striate, covered with short brownish appressed hairs; leaves pinnate, large, 26 to 44 cm. long, glabrous; petioles stout, striate, 4 to 10 cm. long; leaflets 6 or 7, the petiolules of lateral leaflets 3 to 9 mm. long, those of terminal leaflets 2 to 3 cm. long, the blades subcoriaceous, oblong or elliptic-lanceolate, 8 to 21 cm. long, 3.5 to 7 cm. wide, apex short acuminate or acutish, base acute and decurrent, costa prominent, lateral nerves 9 to 15 on each side, reticulate veined on both surfaces; panicles axillary, long-pedunculate, narrow, few-branched, 4.5 to 12 cm. long, glabrate with age; fruits ovoid, 2.3 to 2.8 cm. long, 1-celled, oblique, the apex truncate.

Type in the Herbarium of the University of Michigan, C. L. Lundell 6841, collected in riparian forest near San Agustín, Mountain Pine Ridge, El Cayo District, British Honduras, August 7, 1936.

The species appears to be closely related to T. mexicana Marchand, but may be readily distinguished by size of leaves and fruits.

ILEX BELIZENSIS Lundell, sp. nov.

Arbor glabra, 40 m. alta, trunco 45 cm. diam. Ramuli nigrescentes. Folia subcoriacea vel subchartacea, glabra, oblongo-elliptica vel oblanceolata, 5--11.5 cm. longa, 2.5--4.4 cm. lata, apice obtuse acuminata, basi rotundata et breviter decurrentia vel acutiuscula; petiolis 6--9 mm. longis; stipulis subulato-triangularibus, ca. 1.1 mm. longis, persistentibus. Infructescentiae in foliorum axillis 3--8-fasciculatae, pedicellis 2--4 mm. longis. Calyce persistenti ca. 4.5 mm. diam., breviter 4-partito. Drupa (immatura) ovoidea vel ellipsoidea, 6--7.5 mm. longa, 5--6 mm. diam.

A glabrous tree, 20 to 40 m. high; trunk 30 to 45 cm. in diam.; bole straight; bark rough, but not fissured; cortex discoloring when cut; branchlets slender, striate, drying black; internodes 0.5 to 2 cm. long; stipules triangular, subulate, about 1.1 mm. long; petioles slender, canaliculate, 6 to 9 mm. long, drying black; leaf blades subcoriaceous or subchartaceous, oblong-elliptic or broadly oblanceolate, 5 to 11.5 cm. long, 2.5 to 4.4 cm. wide, apex acuminate, the acumen obtuse, base rounded and slightly decurrent, or acutish, costa plane or slightly impressed above, prominent beneath, lateral veins slightly elevated, 7 to 10 on each side, margin entire, slightly revolute, dark green, turning blackish when dried; infructescence fasciculate, axillary, consisting of 3 to 8 pedicels; pedicels thick, 2 to 4 mm. long, minutely puberulous; the persistent calyx about 4.5 mm. wide, minutely puberulous, shallowly 4-lobed, the lobes rounded or somewhat obtuse-triangular; drupe (immature) ovoid or ellipsoid, 6 to 7.5 mm. long, 5 to 6 mm. in diam., drying black, containing 4 or 5 nutlets; the persistent stigma 4- or 5-lobed, about 2 mm. in diameter.

Type in the Herbarium of the University of Michigan, C. L. Lundell 6247, collected in advanced forest in limestone valley near Valentin, El Cayo District, British Honduras, June 26, 1936.

Additional specimens examined: BRITISH HONDURAS: El Cayo District: Valentin, Lundell 6205, 6331, 6332.

I. belizensis is one of the characteristic large trees in the advanced forest on the limestone plateau. Although most abundant in the valleys, it is also present in considerable numbers on the hills. The species is evidently related to I. guianensis (Aubl.) Kuntze.

Certain British Honduras collections [Lundell 4237; Bartlett 13087; Schipp 66, 507; Gentle 72, 1024, 1190, 1244, 1271] referred by Standley to I. panamensis Standl. agree rather closely with Guiana specimens [Broadway 741, 895; De la Cruz 2954, 3654] distributed as I. guianensis. Further study may show that I. panamensis is a synonym of this species.

CLUSIA SUBORBICULARIS Lundell, sp. nov.

Arbor 17-metralis, omnino glabra, trunco 25 cm. diam. Folia coriacea, orbiculari-obovata vel suborbicularia, 12.5--16 cm. longa, 9--12.2 cm. lata, apice rotundata, basi cuneata, breviter decurrentia, costa subtus elevata, ad apice obsoleta, nervis lateralibus prominulis; petiolis 15--20 mm. longis, crassis. Inflorescentiae terminales, breves, 2- vel 3-florae. Bracteae calycinae 6--10, latissime ovato-orbiculares, 3--9 mm. longae, rotundatae vel obtusae. Sepala 4, latissime ovato-orbicularia, ca. 11 mm. longa, 13 mm. lata, rotundata. Capsula obovoidea, ca. 3.5 cm. longa, 6-locularis (raro 5- vel 8-locularis).

A glabrous tree 17 meters high; trunk 25 cm. in diam.; petioles 15 to 20 mm. long, thick, flattened above, 3 to 4 mm. wide; leaf blades coriaceous, orbicular-obovate or suborbicular, 12.5 to 16 cm. long, 9 to 12.2 cm. wide, apex rounded, base cuneate, shortly decurrent, costa prominent beneath but becoming obsolete 2.5 to 3.5 cm. from apex, primary veins conspicuous, 20 to 25 on each side, diverging from the costa at a broad angle, merging into a submarginal vein; inflorescence terminal, very short, 2- or 3-flowered; the fruiting peduncles thick, less than 1.5 cm. long; bracts 6 to 10, very crowded, depressed ovate-orbicular, 3 to 9 mm. long, rounded or obtuse; sepals 4, depressed ovate-orbicular, about 11 mm. long, 13 mm. wide, rounded; capsule obovoid, about 3.5 cm. long, 6-celled (rarely 5- or 8-celled); the persistent stigmas 6 (rarely 5 or 8).

Type in the Herbarium of the University of Michigan, C. L. Lundell 6805, collected in open secondary forest on top of limestone hill near San Agustín, Mountain Pine Ridge, El Cayo District, British Honduras, August 6, 1936.

Additional specimens examined: GUATEMALA: Department of Petén: La Libertad, Aguilar 241; collected on top of limestone hill; vernacular name "sello".

In the absence of flowers the exact relationship of C. suborbicularis has not been determined. It is clearly unlike any American species known to the writer.

Another interesting and apparently undescribed Clusia, resembling C. Lundellii Standl., but differing in its much larger leaves and capsules 12 cm. long, was collected near Valentín on the limestone plateau.

CALYPTRANTHES BELIZENSIS (Standl.) Lundell, comb. nov.

Eugenia belizensis Standl., Field Mus. Bot. 11: 137. 1932.

The calyx is evidently calyptrate, hence the species should be referred to Calyptranthes.

EUGENIA MATUDAI Lundell, sp. nov.

Arbor glabra, ramis hornotinis crassis, compressis; internodiis 3.5--5 cm. longis. Folia lanceolata vel lanceolato-elliptica, 16--18 cm. longa, 7--7.5 cm. lata, apice angustata, obtusa, basi acuta, subchartacea, glabra; petiolis 1.7--2.2 cm. longis. Pedicelli fructiferi axillares, fasciculati, crassi, 1--3 cm. longi. Bacca ellipsoidea, 2--2.5 cm. longa, 1.7--2.3 cm. crassa, glabra, apice basique rotundata. Calycis lobi persistentes, rotundati, 6--7 mm. lati, 3--7 mm. longi, crassi.

A glabrous tree; branchlets thick, somewhat compressed, especially at the enlarged nodes; internodes 3.5 to 5 cm. long; leaves subchartaceous, large, entirely glabrous; petioles canaliculate, 1.7 to 2.2 cm. long; leaf blades lanceolate or lanceolate-elliptic, 16 to 18 cm. long, 7 to 7.5 cm. wide, narrowed to an obtuse apex, base acute, costa prominent beneath, the lateral nerves 10 to 15 on each side; fruiting pedicels axillary, fasciculate, stout, 1 to 3 cm. long, glabrous; fruits ellipsoid, 2 to 2.5 cm. long, 1.7 to 2.3 cm. thick, inconspicuously 8- to 12-ribbed, rounded at both ends, glabrous, 1-seeded; the 4 persistent calyx lobes rounded, 6 to 7 mm. wide, 3 to 7 mm. long, thick, glabrous.

Type in the Herbarium of the University of Michigan, Eizi Matuda 648, collected on Mt. Madre Vieja, Chiapas, Mexico, May 2, 1936.

The large thin leaves, long stout petioles, long fruiting pedicels, and large fruits distinguish E. Matudai.

OLETHRA GLABERRIMA Lundell, sp. nov.

Arbor. Ramuli glabri. Folia parva, glabra, coriacea, petiolis 8--14 mm. longis; laminis lanceolatis vel oblanceolatis, 5--8 cm. longis, 1.5--2.9 cm. latis, apice apiculato-obtusis vel acutis, basi obtusis vel acutis, integris. Racemi ca. 10, graciles, 1--7 cm. longi, tomentelli; pedicellis 1.2--2.7 mm. longis. Calyx tomentellus, ca. 3.6 mm. longus. Petala oblonga vel oblongo-obovata, 3--3.6 mm. longa, 2--2.2 mm. lata, emarginata, ciliato-fimbriata.

A tree; branchlets rather slender, pale reddish-brown, entirely glabrous; leaves small, glabrous, coriaceous; petioles slender, shallowly canaliculate, 8 to 14 mm. long; leaf blades lanceolate or oblanceolate, 5 to 8 cm. long, 1.5 to 2.9 cm. wide, apex apiculate-obtuse or acute, base obtuse and slightly decurrent, or acute, equal or subequal, margin entire, drying paler beneath, costa pale reddish-brown, impressed above, prominent beneath, lateral veins obscure, about 9 pairs, finely reticulate-veined; inflorescence of branched racemes; racemes about 10, slender, 1 to 7 cm. long, brownish-tomentulose with stellate hairs; pedicels 1.2 to 2.7 mm. long, each subtended by a narrow caducous bract 4 to 5 mm. long; calyx tomentulose, about 3.6 mm. long, the

segments oblong or ovate-oblong, obtuse, ciliate; petals oblong or oblong-obovate, 3 to 3.6 mm. long, 2 to 2.2 mm. wide, emarginate, ciliate-fimbriate; filaments glabrous; style short, less than 1 mm. long; ovary hirsute.

Type in the Herbarium of the University of Michigan, Eizi Matuda 520, collected on Mt. Orando, Chiapas, Mexico, April 25, 1936.

C. glaberrima evidently is related to C. suaveolens Turcz. It differs from that species in having shorter racemes and pedicels, smaller ciliate-fimbriate emarginate petals, and shorter styles.

The writer's interpretation of C. suaveolens is based on Britton's description [N. Amer. Fl. 29: 5. 1914] and specimens of the species from Alta Vera Paz, Guatemala, collected by Tuerckheim in February, 1886.

CLETHRA MATUDAI Lundell, sp. nov.

Arbor. Ramuli glabri. Folia coriacea, glabra, petiolis 0.7--2 cm. longis; laminis lanceolato-ellipticis, 7--12.5 cm. longis, 1.8--4.7 cm. latis, apice apiculato-obtusis vel acutis, basi cuneatis, serrulatis. Racemi 7, breves, fulvotomentelli.

A tree; branchlets entirely glabrous, brownish; leaves coriaceous, entirely glabrous; petioles canaliculate, 0.7 to 2 cm. long; leaf blades lanceolate-elliptic, broadest near the center, 7 to 12.5 cm. long, 1.8 to 4.7 cm. wide, apex apiculate-obtuse or acute, base cuneate, equal or subequal, apical two-thirds of margin irregularly serrulate with low incurved teeth, costa and lateral veins impressed above, the costa prominent beneath, the lateral veins slightly elevated; racemes 7, short, fulvous-tomentulose; pedicels, subtending bracts, and flower buds tomentulose.

Type in the Herbarium of the University of Michigan, Eizi Matuda 398, collected at Pasitar, Chiapas, Mexico, December 29, 1936.

Although flowering material is not available for comparison, the species appears easily separable from the other North American representatives of the genus. C. Matudai may be related to C. vulcanicola Standl. of Costa Rica, which is described as having "coarsely dentate" nearly glabrous leaves and tardily glabrate branchlets.

CLETHRA PARVIFOLIA Lundell, sp. nov.

Frutex (?) ramosissimus. Folia subcoriacea, oblanceolato-oblonga, 4.5--7.5 cm. longa, 1.3--2.5 cm. lata, apice acuminata vel acuta, basi acuta, supra glabra, subtus minute albidopuberula; petiolis 6--12 mm. longis. Racemi 3--8, graciles, 3--9 cm. longi, minute tomentelli; pedicellis 2.5--4 mm. longis. Calyx tomentellus, 3.7--4 mm. longus. Petala ob-

ovata, 4--5 mm. longa, ciliato-fimbriata.

A shrub (?), much branched; branchlets slender, rough, covered with a pale reddish-brown stellate tomentum, glabrate early; leaves clustered at the apices of the branchlets; the internodes very short; petioles slender, 6 to 12 mm. long, sparsely covered with stellate hairs; leaf blades subcoriaceous, oblanceolate-oblong, 4.5 to 7.5 cm. long, 1.3 to 2.5 cm. wide, apex acuminate or acute, base acute, costa impressed above, costa and lateral veins conspicuous beneath and glabrate very early, irregularly serrulate, entirely glabrous above, covered beneath (except upon the veins) with a very fine whitish tomentum; racemes 3 to 8, slender, erect, 3 to 9 cm. long, tomentulose; pedicels slender, 2.5 to 4 mm. long, each subtended by a narrow caducous bract equaling the pedicel; calyx tomentulose, 3.7 to 4 mm. long, the segments variable in form, ciliate, the 3 outer oblong, obovate, or ovate-oblong, acutish, the 2 inner obovate, rounded; petals obovate, 4 to 5 mm. long, ciliate-fimbriate; filaments glabrous; style 1.2 mm. long or shorter; ovary hirsute.

Type in the Herbarium of the University of Michigan, Eizi Matuda 452, collected on Mt. Orando, Chiapas, Mexico, December 30, 1936.

SIDEROXYLON MATUDAI Lundell, sp. nov.

Arbor. Folia oblanceolata, 9--19.5 cm. longa, 3.5--7 cm. lata, apice obtusiuscula, basi longe attenuata, acuta; petiolis 1--1.8 cm. longis. Pedicelli 1.3--1.8 cm. longi. Sepala 5, persistentia, glabra, latissime ovata vel orbiculari-ovata, rotundata, inaequalia, exteriora ca. 1.5 mm. longa, 2 mm. lata, interiora 2--2.7 mm. longa, 2.5--3.2 mm. lata. Fructus subglobosus vel ovoideus, ca. 2 cm. longus.

A tree; older parts of branchlets defoliate, glabrous, reddish-brown; new growth leaf-bearing; apical buds covered with appressed reddish hairs; leaves thin, crowded at ends of branchlets, covered at first on both surfaces with appressed reddish or silvery hairs, becoming glabrous very early; petioles 1 to 1.8 cm. long, glabrous; leaf blades oblanceolate, 9 to 19.5 cm. long, 3.5 to 7 cm. wide, apex obtusish, base long-attenuate, acute, costa impressed above, prominent beneath, lateral nerves 15 to 19 on each side, prominent beneath; fruiting pedicels 1 to several, borne on branchlets below the leaves, glabrous, rather thick and stiff, 1.3 to 1.8 cm. long; calyx persisting at base of fruits 5-phyllous, glabrous, the sepals depressed ovate or orbicular-ovate, rounded at apex, unequal, the outer smaller ones less than 1.5 mm. long, about 2 mm. wide, inner ones 2 to 2.7 mm. long, 2.5 to 3.2 mm. wide; fruits subglobose or ovoid, about 2 cm. long, glabrous, sharply apiculate; seeds ovoid, about 1.8 cm. long; umbilical area ovate-oblong; en-

dosperm abundant (in immature seed).

Type in the Herbarium of the University of Michigan, Eizi Matuda 571, collected on Mt. Orando, Chiapas, Mexico, December 16, 1936.

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(a) Contribution from the Herbarium of the University of Michigan.

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- II

Harold N. Moldenke

The following notes are supplementary to those contained in my original monograph of the genus (1) and in the first installment of the present series of additional notes (2). To the list of herbarium abbreviations should be added the following: Pr = Princeton University, Princeton, N. J. The total number of recorded contributors to our knowledge of this genus, as given on page 245 of my original monograph and on page 183 of the first part of these additional notes, should be 578 and the number of publications reviewed 197.

49a. AEGIPHILA ACULEIFERA Moldenke.

The species ascends to at least 1300 m. in Costa Rica and has been collected in anthesis in November. A vernacular name in Costa Rica is "tabaquilla".

Additional citations: COSTA RICA: Alajuela: Brenes 5709 [301] (F--2).

6. AEGIPHILA ANOMALA Pittier.

The species has been collected in anthesis in May and in fruit in February. A vernacular name in Costa Rica is "tabaquillo". It has been confused by some with Siparuna and a few herbarium specimens have been distributed under that name!

Additional citations: COSTA RICA: Alajuela: Brenes 6652 (F), 15,661 (F).

21a. AEGIPHILA AUSTRALIS Moldenke.

Additional citations: BRAZIL: Santa Catharina: Ule 1520 (N--photo of type, Z--photo of type).

113. AEGIPHILA CORDIFOLIA (Ruíz & Pav.) Moldenke.

Additional citations: PERU: Department undetermined: Ruíz & Pavon s.n. [Miña, Panatahua] (F--isotype).

35. AEGIPHILA CRENATA Moldenke.

The Pickel 526, 3030, and 3042 specimens from Pernambuco cited by me on page 327 of my monograph and on page 196 of the first installment of these additional notes, do not represent A. crenata. They represent a new species which will be fully described under species 35a in a future installment of these notes.

117. AEGIPHILA DEPPEANA Steud.

This species has been confused with and some herbarium specimens distributed as Callicarpa sp. and Aegiphila martinicensis.

Additional citations: MEXICO: State undetermined: Sessé, Mociffo, Castillo, & Maldonado 603 (Q), 1074 (Q). CULTIVATED: England: P. Miller 8 [Herb. Linnaeus G.810, S.9] (Z--photo).

124. AEGIPHILA ELATA Sw.

The type of P. Browne's Knoxia 2 is apparently sheet number 8, under genus 810, Clerodendron, in the Linnaean Herbarium. The "Deschisaux" cited by me on page 199 of my first supplement is an error for Descluseaux.

Additional citations: JAMAICA: P. Browne s.n. [Herb. Linnaeus G.810, S.8] (Ls, Z--photo). COSTA RICA: Alajuela: Brenes 6193 (F).

121. AEGIPHILA ELEGANS Moldenke.

The Ule 9718 cited by me in Phytologia 1: 200 (1937) should have been written "Ule 9718, in part", since other specimens of this number are definitely A. ovata.

Additional citations: BRAZIL: Amazonas: Krukoff 8701 (N).

15. AEGIPHILA FASCICULATA Donn. Sm.

The "Aegiphila fasciculata Donn. Sm." which Standley describes in Field Mus. Pub. Bot. 10: 334-335 and illustrates on plate 57 (1931) is A. monstrosa, not Dermatocalyx parviflorus Ørst. as erroneously stated by me in Phytologia 1: 200 (1937).

31. AEGIPHILA FERRUGINEA Hayek & Spruce.

The "Sodiho 152/22" cited in Brittonia 1: 476 (1934) is a typographic error for Sodiho 125/22.

63. AEGIPHILA FILIPES Mart. & Schau.

Krukoff describes this species as a shrub to 10 feet tall, with a stem to 1/2 inch in diameter and orange fruit,

inhabiting old clearings.

Additional citations: BRAZIL: Amazonas: Krukoff 8041 (N).

2. AEGIPHILA GOUDOTIANA Moldenke.

The "Goudot s.n. [Bogotá]" cited by me as this species in Brittonia 1: 473 (1934) is a typographic error. The collection actually represents A. grandis.

4. AEGIPHILA GRANDIS Moldenke.

The "Goudot s.n. [Bogotá]" cited by me in Brittonia 1: 473 (1934) as A. Goudotiana, is the result of a typographic error. The collection actually represents A. grandis, as stated on page 286.

95. AEGIPHILA HERZOGII Moldenke.

Additional citations: BOLIVIA: Santa Cruz: Herzog 1369 (A--photos of type & of isotype, B--isotype, B--photos of type & of isotype, Cb--isotype, D--photos of type & of isotype, F--photos of type & of isotype, G--photo of type, K--photos of type & of isotype, Lc--isotype, Mu--isotype, N--fragment of isotype, N--photos of type & of isotype, P--photos of type & of isotype, W--photos of type & of isotype, Z--photos of type & of isotype).

109. AEGIPHILA HIRSUTA Moldenke.

Additional citations: BOLIVIA: La Paz: Buchtien 1715 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

86. AEGIPHILA HIRSUTISSIMA Moldenke.

Additional citations: COLOMBIA: Bolívar: Pennell 4563 (N--photo, Z--photo). VENEZUELA: Miranda: H. Pittier 8257 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--isotype, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

115a. AEGIPHILA HOEHNEI Moldenke, sp. nov.

Frutex subscandens; ramis subgracilibus obtuse tetragonis dense villosis; ramulis densissime ochraceo-villosis, pilis rectis antrorsis 1--2 mm. longis ad basin bulbosis; petiolis 5--8 mm. longis densissime longeque villosis; laminis ovatis 8--12.5 cm. longis, 3.7--6 cm. latis, acuminatis integris, ad basin rotundatis vel subcordatis, supra setosis et subbullatis, subtus dense villosis; inflorescentiis axillaribus terminalibusque; panícula terminali cymosa; cymis subabbreviatis multifloris paucis; pedunculis crassis

usque ad 1.5 cm. longis dense ochraceo- vel fulvo-villosis; calyce infundibulariformi 8--10 mm. longo, ca. 4.6 mm. lato, dense setoso-villoso, margine valde 4-lobato; tubo corollae albae ca. 7.2 mm. longo; ovario subtetragono ca. 1.5 mm. longo et diametro, ad basin et apicem truncato glabro 4-loculari; calyce fructifero magno incrassato cupuliformi, extra setoso-villoso, margine profunde 4-lobato.

Subscandent shrub; branches rather slender, obtusely tetragonal, densely but often irregularly villose with gray forward-pointing hairs of various lengths; branchlets rather slender, obtusely tetragonal, very densely ochraceous-villous with straight forward-pointing hairs 1--2 mm. long and bulbous at base; principal internodes 2.7--6.3 cm. long; leaves decussate-opposite; petioles stout, 5--8 mm. long, very densely long-villose like the branchlets; blades firmly membranous or subcoriaceous, bright green, somewhat lighter beneath, very nitid above, ovate, 8--12.5 cm. long, 3.7--6 cm. wide, acuminate, entire, beautifully rounded or subcordate at base, setose above with stiff hairs 1--2.5 mm. long and conspicuously bulbous at base, densely villose beneath with ochraceous hairs 2--3 mm. long and not at all bulbous, densest at the venation, densely punctate beneath; midrib slender, prominent in a channel above, rather prominent beneath; secondaries 7--10 on each side, arcuate-ascending, prominent above, prominent beneath; vein and veinlet reticulation abundant and very handsome, decidedly prominent above and prominent beneath, the lamina more or less pressed up from beneath in the interstices (at least, when dry), thus imparting a bullate appearance to the upper surface and causing the venation beneath to be very prominent; inflorescence axillary and terminal; terminal panicle cymose like the axillary cymes; cymes rather abbreviated, about 3 cm. long and 2.5 cm. wide in anthesis, to 4.5 cm. long and 5 cm. wide in fruit, many-flowered, solitary, few; peduncles stout, to 1.5 cm. long, usually much shorter, very densely villose with ochraceous or fulvous forward-pointing hairs; calyx infundibular, 8--10 mm. long, about 4.6 mm. wide, very narrow to just above the ovary, then ampliate, densely setose-villose with hairs to 2 mm. long, its rim deeply 4-lobed, the lobes ovate, about 2.6 mm. long and 2 mm. wide, decidedly rounded and subcucullate at apex, setose; corolla white, its tube at least 7.2 mm. long, narrow-cylindric, glabrous; corolla-limb, stamens, and stigma not seen; style at least 7 mm. long, slender, glabrous; ovary subtetragonal, about 1.5 mm. long and wide, truncate at both ends, glabrous, 4-celled; fruiting-calyx very large and incrassate, cupuliform, to 1.5 cm. long and 1.8 cm. in diameter, villous-setose outside, its rim deeply 4-lobed, the lobes triangular-ovate and about 7 mm. long; fruit yellow-orange, ob-

long, 13--16 mm. long, 9--10 mm. wide, glabrous or slightly verruculose in drying, not nitid, 4-seeded.

The type of this distinct and extremely handsome species was collected by João Geraldo Kuhlmann at Manaus, Amazonas, Brazil [Comissão Rondon 2277], in November, 1918, and is deposited in the herbarium of the Instituto Biologico de Defesa Agricola e Animal at São Paulo. It gives me great pleasure to dedicate this species to Dr. Frederico Carlos Hoehne, whose indefatigable labors and collections have added so very materially to our knowledge of the flora of Brazil. The species is obviously related to A. cordata, A. villosissima, and A. racemosa, from all of which species, however, it differs in many characters, especially in the subbullate character of its upper leaf-surface, its subcoriaceous blades, its bulbous-based setose hairs on branches, branchlets, and upper leaf-surface, etc. A. cordata and A. villosissima, which have pubescence most like that of the present species, never have the subcoriaceous and subbullate blades, while A. racemosa, which has the coriaceous or subcoriaceous blades and strong vein and veinlet reticulation, does not have a pubescence anything like that of our present species.

BRAZIL: Amazonas: Kuhlmann, Com. Rondon 2277 [Herb. Inst. Biol. S. Paulo 33,425] (N--fragment of type, N--photo of type, Sp--type, Z--photo of type).

106. AEGIPHILA INSIGNIS Moldenke.

Additional citations: PERU: Ancachs: Tafalla s.n. [Chicoplaya] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

42. AEGIPHILA INTEGRIFOLIA (Jacq.) Jacks.

On page 339 of my monograph the name of Huggins should have been given as the actual collector of Trin. Bot. Gard. Herb. 2385; on line 44 of the same page Burchell 8345 should be deleted, since more careful study have proved this collection to be A. paraguariensis. The "Spruce 3113" cited on pages 339 and 476 should have been cited as "3113, in part", since some sheets of this number are identical with Spruce 3578, which is A. guianensis, and the "Schomburgk 404" cited on the same pages should have been cited as "M. R. Schomburgk 404, in part", since some sheets of this number are also definitely A. guianensis. C. Houard (3) reports that A. integrifolia is often infested with the galls of the insect Autodiplosis Jheringi Tavares. He also records the vernacular name "tocaneiro" for the plant and (4) says that the galls of Aegiphila merit further study. Klug describes the

species as a slender tree to 10 m. tall, inhabiting dense cut-over woods and mountain forests, with white flowers and the fruit in heavy clusters, blooming in December, fruiting in March. The type specimen of Manabea arborescens has been examined by the present writer in the herbarium of the British Museum (Natural History). The Ryan s.n. specimen from Trinidad in the British Museum herbarium is inaccurately labeled "Type specimen" of Aegiphila arborescens. The actual type of Aegiphila arborescens is the same specimen as constitutes the type of Aublet's Manabea arborescens. The Aegiphila arborescens var. longiflora Schau. cited by me on page 337 of my monograph as a synonym of A. integrifolia, has proved, upon examination of the actual cotypes at Munich, to be synonymous with A. bracteolosa. The Ruiz & Pavon collection from Pentahua and Chichao is the type collection of Callicarpa globiflora. The "Burchell 3418" cited in Brittonia 1: 339 & 472 (1934) should read "Burchell 3418, in part", since at least one sheet of this number is A. Sellowiana.

Additional citations: TRINIDAD: W. E. Broadway 5838 (A, Bm--2, E, K), 6682 (E, F, Z--photo), s.n. [Manzanilla, Aug. 1918] (K), s.n. [Trin. Bot. Gard. Herb. 7164] (R); Crüger s.n. [17 Aug. '46] (K); Eggers 1002 [Herb. Monac. 3831] (B--2, Br, Mu, P, Vu), 1364 (Cp--2, K); Fendler 596 (Bm, K); Higgins s.n. [Trin. Bot. Gard. Herb. 2385] (B, W); Ryan s.n. (Bm, Cp--7, Le); Swabey s.n. [Trin. Bot. Gard. Herb. 12,232] (K); Trin. Bot. Gard. Herb. 4770 (R); Vahl s.n. [1796; Herb. A. L. Jussieu 5036] (P); Williams, Freeman, & Cheesman s.n. [Trin. Bot. Gard. Herb. 11,329] (K). COLOMBIA: Boyacá: Lawrance 548 (A, B, Cb, E, G, N, S, Ut); Department undetermined: Triana 375 (Bm, W). VENEZUELA: Zulia: H. Pittier 10,626 (Cb, P); Tejera 119 (G), 124 (G, Z--photo); Amazonas: Bonpland 956 (B); Spruce s.n. [April, 1850] (Bm, Cb--3, Ed, F). BRITISH GUIANA: Gleason 313 (Z--photo); Jerman 1761 (Z--photo), 5796 (U, Z--photo), 5948 (U); M. R. Schomburgk 362 (B, Bm, K), 404, in part (Bm, Cb--2, Dc, F, K, Le, P, Us), 679 (B); Waby 8355 (U). FRENCH GUIANA: Aublet s.n. (Bm); Herb. Adanson 227 (P). ECUADOR: Napo-Pastaza: Mexia 7173 (N), 7187 (N), 7289 (N). PERU: San Martín: Klug 3468 (Cb, E, I, N); Loreto: Castelnau s.n. [Río Ucayali] (P); Ule 6821 (Cb, Le); Huanuco: Macbride 5053 (B, Z--photo); Department undetermined: Dombey s.n. (P--2); Ruiz & Pavon s.n. [Pentahua & Chichao] (Bm, N--2 photos, Z--2 photos), s.n. [Peruvia et Chili] (Bm, N--photo, Z--photo). BRAZIL: Amazonas: Ducke 6739 (Cb); Huber 4253 (Cb); Labroy 2 (P--2); Poeppig 1615 (A--photo, B--photo, Bm, Cb, D--photo, Dc, F--photo, G--photo, K, N--photo, P, V--2, W--photo, Z--3 photos); Ule 7861 (B, Cb, Le, W); Pará: Spruce 691 [Herb. Monac. 1002] (Mu), 3113, in part (B, Bm, Br, Cb--2, Cp, Ed), s.n. [In

vicinibus Santarem] (K); Bahia: W. Baldwin s.n. [June 3, 1818] (N--photo, Z--photo); Blanchet 2121 [Herb. De Candolle 829] (Cb, Dc); Minas Geraes: Mexia 4203 (B, Bm, Cb, D, E, G, I, P, S), 4300 (A, B, Bm, Cb, D, E, G, I, P, S, W); Rio de Janeiro: Burchell 2581 (K); São Paulo: Curran 9 (N); Matto-grosso: Hoehne, Com. Rondon 1341 (B), 5122 (N); State undetermined: Glaziou "A" (P--2). BOLIVIA: El Beni: Buchtien 5533 (Mu); H. H. Rusby 1722 (Z--photo), 2459 (Z--photo); La Paz: M. Bang 584 [Herb. Monac. 1726] (A--photo, B--photo, Bm, Cb, Cp, D--photo, E, Ed, F--photo, G--photo, K, L, Le, Mi, Mu, N--photo, Ol, R, Us--2, Vu, W, W--photo, Z--2 photos), 671 (Cb); Buchtien 719 (Cb, Cp, E, Ed, K, N--photo, Z--photo); Cardenas 2065 (K, Mi, Z--photo); Fleischmann 520 (S--2); Troll 1704 (B); Santa Cruz: Herzog 1571 (B, Cb, Le, Z--photo); Steinbach 5498 (Cb, Z--photo), 7514 (Bm, Cb, E, K). CULTIVATED: Hispaniola: Haiti: Mayerhoff s.n. [1859] (B). LOCALITY OF COLLECTION UNDESIGNATED: Collector undesignated s.n. (P). ILLUSTRATIONS: Aubl. Hist. Pl. Guian. 1: 64. 1775. (P).

44. AEGIPHILA INTERMEDIA Moldenke.

The petioles of this species become up to 2 cm. in length and the leaf-blades to 24 cm. long and 9 cm. wide. The leaf-blades are villose with short straight hairs beneath, not tomentose as erroneously stated by me on page 342 of my monograph.

Additional citations: BRAZIL: Pará: Huber 809 (Bm); Maranhão: Ducke 544 (Cb, N--fragment); Herb. Gen. Mus. Para. 2270 [Herb. Mus. Goeldi] (A--photo of type, B--photos of type & of isotype, Bm--isotype, Cb--isotype, D--photo of type, G--photo of type, K--photos of type & of isotype, N--photos of type & of isotype, P--photo of type, S--photos of type & of isotype, W--photo of type, Z--photo of type).

82. AEGIPHILA KILLIPII Moldenke.

Additional citations: COLOMBIA: Santander Norte: Killip & Smith 20,870 (A--isotype, A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

53. AEGIPHILA LAETA H.B.K.

On page 394 of my monograph I gave the name A. laeta H. B.K. as a synonym of A. laevis (Aubl.) Gmel. This was done before the opportunity was presented to me of examining the type of A. laeta -- the reduction having been made on the basis of statements in the literature of the genus. Since 1934, however, I have examined the original type of A.

laeta. It has been found to be a perfect match for the species which I called A. stricta Rusby on pages 352--353 of my monograph. Rusby's name, therefore, has to be reduced to synonymy and the correct name for species no. 53 now becomes A. laeta H.B.K. Mocquerys reports the species as a tree 3--4 m. tall, with white flowers and orange fruit. The name A. stricta is sometimes erroneously accredited to me on herbarium sheets!

Additional citations: PANAMA: Taboga Island: Barclay 2498 (Bm, N--fragment). COLOMBIA: Magdalena: C. Allen 416 (K); H. Smith 330 (B--photo, Ob, D--photo, E, G--photo, K--2, N--3 photos, P--3, S--photo, Ut, W, W--photo, Z--4 photos), 330a (Z--photo); Santander Sur: Killip & Smith 14,971 (N--photo, Z--photo); Caldas: Bonpland 1664 (N--photo of type, P--type & isotype, Z--photo of type). VENEZUELA: Zulia: Plée s.n. [Maracaybo] (Z--photo); Anzoategui: Potter 5154 (N); State undetermined: Mocquerys 1018 (P--4); Saer 602 (F).

78. AEGIPHILA LAEVIS (Aubl.) Gmel.

Aegiphila laeta H.B.K. is not a synonym of A. laevis (Aubl.) Gmel. as stated by me on page 394 of my monograph, but is the correct name for species no. 53 (which see, above). The specific name of the present species is sometimes misspelled "levis", both under Aegiphila and under Marabea, the former appearing by accident in Brittonia 1: 389 (1934). The species has occasionally been confused with A. brachiatata. The misspelling "Aegiphila laevis" also occurs. The Von Rohr s.n. from Cayenne at the British Museum is labelled "Type specimen". It is indeed a very typical specimen, but not the nomenclatural type. The actual type is the Aublet s.n. in the same herbarium. The type has the calyx splitting into 4 acute lobes or teeth when the flowers are in full anthesis, merely scalloped before anthesis!

Additional citations: COLOMBIA: Antioquia: Pennell 3696 (Z--photo). BRITISH GUIANA: Talbot s.n. (Z--photo). SURINAM: Berthoud-Coulon 196 (Bm); Collector indig. 82 (Ut); Hostmann 543 (Bm--2, Ob, K), 721 (K), s.n. (Le); Hostmann & Kappler 543 [Herb. Monac. 1189] (Mu, Ut, V--2, Z--3 photos), 721 (V, Z--4 photos); Kappler 543 (P), s.n. (Z--photo); Samuels 104 (K), 382 (Z--photo); Wulfschlägel 405 (Br--3, V, Z--photo). FRENCH GUIANA: Aublet s.n. (A--photo of isotype, B--photo of isotype, Bm--type, D--photo of isotype, F--photo of isotype, G--photo of isotype, N--photo of isotype, S--photo of isotype, W--photo of isotype, Z--photo of isotype); Collector undesignated s.n. [Cayenne] (Dc--3, P), s.n. (P--2); Estebom 7 (P--2); Gabriel s.n. [1802] (Ob--3); Leblond 362 (P); Leprieur s.n. [Guian. fr.] (Dc), s.n. (Z--photo); J. Martin s.n. [Rudge] (Bm), s.n. (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, S--photo, W--photo, Z--2 pho-

tos); Mélinon s.n. [1845] (P--2); Perrottet s.n. [1819] (Cb--2), s.n. [1820] (Cb, P); Poiteau s.n. (Cb--2, P); L. G. Richard s.n. [Guian. fr.] (P), s.n. (Cp, Z--photo); Sagot s.n. [Boura, 1858] (P), s.n. [Cayenne, Février 1859] (P--2); Soubirou s.n. (P), s.n. [Prés Cayenne] (P); Von Rohr s.n. [Cayenne] (Bm). BRAZIL: Bahia: Blanchet 862 (Cb), 1600 (Bm, Cb); Sellow 1828 (B, Z--2 photos); Rio de Janeiro: Sellow 10 (B, N--2 photos, Z--2 photos); Mattogrosso: Hoehne, Com. Rondon 1287 (Sp); State undetermined: Herb. Link s.n. (Z--photo); Sellow s.n. (N--photo, Z--photo). ILLUSTRATIONS: Aubl. Hist. Pl. Guian. 1: 66. 1775 (P); Lamarck, Illustr. 1: t. 70, f. 3. 1791 (B).

47. AEGIPHILA LANATA Moldenke.

Additional citations: BRAZIL: Goyaz: Glaziou 21,917 (A--photos of type & of isotype, B--photos of type & of isotype, Br--isotype, Cb--isotype, Cp--isotype, D--photos of type & of isotype, F--photos of type & of isotype, G--photo of type, N--fragment of isotype, N--photo of type & 2 photos of isotypes, P--2 isotypes, P--photos of type & of isotype, W--photos of type & of isotype, Z--photo of type & 2 photos of isotypes).

97. AEGIPHILA LANCEOLATA Moldenke.

E. Z. and L. H. Bailey describe this species as a woody vine, with yellowish corollas, blooming in January. The Löfgren s.n. cited by me in my monograph as from São Paulo, Brazil, should have been listed as from cultivation, since the specimens of this collection were collected in the Horto Botânico at São Paulo. The "Instituto Biológico de Defesa Agrícola e Animal, São Paulo, 20,099" and "20,562" cited by me on page 474 as A. vitelliniflora are typographic errors. These two collections are actually A. lanceolata as stated on page 425.

Additional citations: BRAZIL: Pará: Burchell 9645 (K); Minas Geraes: Clausen 630 (P); Espírito Santo: Glaziou 11,333 (Cp, K, Z--2 photos); Rio de Janeiro: Burchell 1624 (K, Z--2 photos); Pohl 553 (L), s.n. [Rio Paranahyba] (A--photo, B--photo, D--photo, F--photo, G--photo, N--2 photos, S--photo, V, W--photo, Z--2 photos); São Paulo: F. G. Hoehne s.n. [Herb. Inst. Biol. S. Paulo 20,562] (Z--photo); State undetermined: Herb. Imp. Vien. 1642 (Z--photo), 1643 (Z--photo). PARAGUAY: Balansa 2094 (Cb--2, N--fragment, P--2); Fiebrig 6241 (A--photo of type, B--isotype, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, S--photo of type, W--photo of type, Z--photo of type). CULTIVATED: Brazil: Rio de Janeiro: Bailey & Bailey 575 (Ba); São Paulo: Löfgren s.n. [Herb. Inst. Biol. S. Paulo 20,099] (N, Z--photo).

79. AEGIPHILA LAXICUPULIS Moldenke.

Additional citations: GUATEMALA: Bernoulli 748 (B, Cb, K); Santa Rosa: Heyde 191 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type); Heyde & Lux 4041 [Herb. Monac. 1723] (Cb--2, Ed, Mu, N--2 photos, W, Z--2 photos). SALVADOR: Ahuachapán: Padilla 80 (E); San Vicente: Calderón 1184 (N--2 photos, Z--2 photos). NICARAGUA: Matagalpa: Rothschuh 628 (A--photo, B--photo, D--photo, F--photo, G--photo, K--photo, N--photo, P--photo, S--photo, W--photo, Z--photo).

76. AEGIPHILA LAXIFLORA Benth.

An additional synonym is Aegiphila laeviflora Briq., in herb. The species has been confused by some with the genus Olerodendrum and some specimens have been distributed under that name!

Additional citations: TRINIDAD: W. E. Broadway 7386 (A, Ob, E, F), s.n. [Buenos Ayres] (D, N, P, W, Z--3 photos); Mrs. W. E. Broadway s.n. [St. Ann's] (A--photo, B--photo, D--photo, G--photo, K, N--2 photos, S--photo, W--photo, Z--3 photos); Grüger s.n. (B, Z--photo); Dannouse s.n. (Z--photo); Finley s.n. [Trin. Bot. Gard. Herb. 2391] (R, W, Z--3 photos); J. R. Johnston 114 (Z--photo); Lockhart s.n. [All hills that have been lately cultd.] (K); L. A. M. Riley 64 (Bm, K); Trin. Bot. Gard. Herb. 427 (Z--photo), 3126 (Z--photo). BRITISH GUIANA: M. R. Schomburgk 401 (Ob, V, Z--photo), 592 (B, N--photo, Z--2 photos), 772 (A--photo of type, B--photo of type, Bm--isotype, Br--isotype, Cb--2 isotypes, D--photo of type, Dc--isotype, F--isotype, F--photo of type, G--photo of type, K--isotype, Le--isotype, N--fragment of isotype, N--photos of type & of isotype, P--isotype, S--photo of type, Us--2 isotypes, V--isotype, W--photo of type, Z--photos of type & of isotype). VENEZUELA: State undetermined: Otto 1092 (Z--2 photos).

27. AEGIPHILA LEHMANNII Moldenke.

The "Triana 2083" cited by me on pages 316 and 476 of my monograph, should read "Triana 2083, in part".

Additional citations: COLOMBIA: Boyacá: Lawrance 156 (A, B, Cb, E, K, Mi, S, W); Chocó: Triana 2083, in part (Bm, Cb, N--fragment), 3713, in part (Bm); El Cauca: Lehmann B.T.1117 (K--2 isotypes, Le--isotype).

81. AEGIPHILA LEWISIANA Moldenke.

Additional citations: VENEZUELA: Federal District: Fendler 844 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type &

3 photos of isotypes, P--photo of type, S--photo of type, W--photo of type, Z--photo of type & 3 photos of isotypes).

33. AEGIPHILA LHOTZKIANA Cham.

Additional synonyms are the following: Aegiphila glandifera Casar., in herb. [not A. glandulifera Moldenke, 1932], Aegiphila villosa Lam., in herb. [not A. villosa (Aubl.) Gmel., 1789], Aegiphila vestita Mart., in herb., and Vitex erythrocarpa Salzm., in herb. [not V. erythrocarpa Gürke, 1928]. The type of A. Lhotzkiana was collected by Johann Lhotsky in April, 1831. The species has been confused with the genus Buddleia and with Callicarpa americana and specimens have been distributed under those names. The "Sellow 2309" cited on page 476 of my monograph is a typographic error for Sellow 2389 and the Usteri s.n. [Herv. Esc. Polit. S. Paulo "2236"] cited on the same page is a typographic error for Herv. Esc. Polit. S. Paulo 223b. Some of the leaves on Glocker 578b are sparsely and irregularly dentate and are marked with glandular disks beneath. The locality of collection of Netto s.n., Barbacena, is erroneously spelled "Barbacoa" on p. 475.

Additional citations: BRAZIL: Ceará: Luetzelburg 26,190 (Mu, N); Parahyba: Pohl 3481 (V); Bahia: Blanchet 46 (Ob), 286 (Ob, Op), 354 (Ob--2, F), 729 (Mi), 1064 (Ob), 1902 (Bm, P), 2064 (Dc), 3397 (Bm), 3399 [Herb. Monac. 1032 & 1447] (Bm, Br--2, Ob--2, Dc, F, Mu--2, P--2, V, Z--photo), s.n. [1857] (Ob); Casaretto 2022 [Macbride photos 24,614] (Ob); Glocker 540 (Bm, N--photo, Z--photo); Lhotsky s.n. [Herb. De Candolle 892] (Ob--isotype, Dc--isotype, N--fragment of isotype, Z--photo of isotype); Lockhart s.n. [Bahia] (Bm); Martius 2222 [Herb. Monac. 1028 & 1029] (Mu--2), s.n. [Herb. Monac. 1030] (Mu); Moricand s.n. (K); Salzmann 432 (Dc), s.n. (E, K--2, P, V), s.n. [1831] (Ed); Sellow s.n. (K); Goyaz: Ule 335 (P); Minas Geraes: Clausen 352 (Bm, Br, Ob), 631 (N, P--2, Us), s.n. [Ourvello] (Le), s.n. [Aug.--April, 1840] (Br--2), s.n. (Bm, Ob); Netto s.n. [Near Barbacena in 1862] (A--photo, G--photo, Z--photo); Regnell I.310x [1865] (N--photo, S, Us, Z--photo), I.310x [1867] (Us), I.310xa (A--photo, B--photo, D--photo, F--photo, N--photo, W--photo, Z--photo); Saint-Hilaire B².2104 (P), s.n. (K, P--2); Warming s.n. [Lagoa Santa] (Op--3, F, N, P, Z--photo); Widgren s.n. [in 1845] (S--2); Paraná: Dusén 1028a (A--photo, B--photo, D--photo, F--photo, G--photo, N--photo, W, W--photo, Z--photo); Jönsson 1028a (B, Ob, E, G, K); State undetermined: Blanchet 79 (Bm), s.n. (K); Glocker 578b (Bm), 2166 (Bm); Herb. Bernhardi s.n. (E); Herb. Imp. Vien. 154 (K), 155 (K--2); Herb. Zuccarini s.n. [Herb. Monac. 1034] (Mu); Lund s.n. (Dc); Poeppig 34 (Z--photo); Pohl s.n. [Herb. Imp. Vien.] (N--photo, V, Z--2 photos), s.n. [Brasília] (Bm, Br);

Sellow 2268 (Br), s.n. [Brasilia] (B--3), s.n. (Dc). SOUTH AMERICA: Country undesignated: Herb. Spruner s.n. (B).

67. AEGIPHILA LONGIFOLIA Turcz.

Additional citations: COLOMBIA: Santander Sur: Engels s.n. [Ocana] (Z--photo); Schlim 688 (A--photo of isotype, B--photo of isotype, Ob--isotype, D--photo of isotype, F--isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--fragment of isotype, N--2 photos of isotypes, S--photo of isotype, W--photo of isotype, X--isotype, Z--2 photos of isotypes); Department undetermined: Herb. Mus. Paris s.n. (P).

93. AEGIPHILA LONGIPETIOLATA Moldenke.

Additional citations: PERU: Loreto: Weberbauer 4667 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

21. AEGIPHILA LUSCHNATHI Schau.

The Saint-Hilaire specimens cited below are anomalous in being densely velutinous throughout, especially on the younger parts, but this condition is approached on the very young parts of several other collections cited under this species in my original monograph. The species has occasionally been confused with the genus Pisonia and some herbarium specimens distributed under that name! The specimens cited in my monograph as "isotypes" ought to have been called cotypes, since the species is based on several separate collections of Luschnath, no particular one of which was specifically designated as the type by Schauer. The "Gaudichaud 468" cited on pages 308 and 473 of my monograph should read "Gaudichaud 468, in part", since part of this collection is A. Fluminensis.

Additional citations: BRAZIL: Bahia: Blanchet 3273 (Bm--2, Br--2, Ob--2, F, Z--photo); Minas Geraes: Clausen 53, in part (Ob, P--2); Glaziou 15,326 (Bm, Br, Ob, Op, K, P, Z--2 photos); Widgren 481 (Z--photo); Rio de Janeiro: Barboza s.n. [1846] (Br); Beyrich s.n. (B); Burchell 734 (K), 1653 (A--photo, B--photo, D--photo, F--photo, G--photo, K--2, W--photo, Z--photo), 2801 (A--photo, B--photo, D--photo, F--photo, G--photo, K, W--photo, Z--photo); Clausen 53, in part (Ob--2, F); G. Gardner 5572 (Bm, K), 5573 (Bm, K); Gaudichaud 110 (P), 468, in part (Ob, P--2); Glaziou 865 (Br--2, Op--2, K, N--photo, P, Z--photo), 8832 (Op, K, P, Z--photo); Guillemin 53 (Ob), 630 (Ob--2, P); Lund s.n. [Rio de Janeiro] (Bm, Op--2); Luschnath s.n. [Lagoa Sacaremo] (A--photo of cotype, B--2 cotypes, B--photo of cotype, Op--

cotype, D--photo of cotype, F--photo of cotype, G--photo of cotype, N--photo of cotype, W--photo of cotype, Z--photo of cotype), s.n. [Brasilia] (E--cotype); Martius 1040 [Macbride photos 7879] (A--photo of cotype, B--photo of cotype, Br--3 cotypes, Cb--cotype, Dc--cotype, G--photo of cotype, N--photo of cotype, Z--photo of cotype); Miers 3712 (Bm, K); Mikan s.n. (N--photo, Z--photo); Regnell 156 (P); Riedel & Luschmuth 431 (L--2); Schott 4918 (V, Z--2 photos); Santa Catharina: Saint-Hilaire C².1721 bis (P--2); Ule 4436 (B); State undetermined: Freyreiss s.n. (Z--photo); Gaudichaud 630 (Dc); Herb. Ventenat s.n. (Cb); Pohl s.n. (Br); Raben 749 (Br), s.n. (Cp).

30. AEGIPHILA MACRANTHA Ducke.

An additional synonym is Clerodendrum capitatum Klotzsch, in herb. [not C. capitatum (Willd.) Schum. & Thonn., 1827]. The species has been confused with Cordia sp. and some herbarium sheets have been distributed under that name!

Additional citations: TRINIDAD: Trin. Bot. Gard. Herb. 1899 (R). BRITISH GUIANA: De la Cruz 2836 (D, E, G, N--photo, Z--photo); Sandwith 502 (B, K--2, Ut, W); M. R. Schomburgk 873 (C, Cb, N--photo, V, X, Z--photo), 1501 (A--photo, B--5, B--photo, D--photo, F--photo, G--photo, N--photo, P, W--photo, Z--photo). FRENCH GUIANA: Mélinon 330 (P), s.n. [in 1864] (P--4, Z--photo), s.n. [1877] (P--3); Wachenheim 484 (P--2), 489 (P--2). BRAZIL: Pará: Ducke 22,549 (B, K, P, S, Ut, X), s.n. [Herb. Rio de Janeiro 18,949] (A--photo of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--3 photos of isotypes, Ut--isotype, W--photo of isotype, Z--2 photos of isotypes); Poeppig s.n. [Collares] (Br).

129. AEGIPHILA MACROPHYLLA H.B.K.

The specimen labelled with this name and discussed by me on pages 470--471 of my monograph proves to be Cornutia odorata var. calvescens Moldenke. Since this specimen is from the Bonpland herbarium, it seems quite probable that Aegiphila macrophylla H.B.K. will eventually prove to be synonymous with some species of Cornutia. The Berlin specimen, however, differs in so many respects from the original description of Aegiphila macrophylla that I do not think that it is part of the type collection. The actual type has not yet come to light. A specimen collected by H. M. Ridley in Porto Rico and distributed under the name "Egiphylla macrophylla" has proved to be Callicarpa ampla Schau.

73. AEGIPHILA MAGNIFICA Moldenke.

Additional citations: NICARAGUA: Chinandega: C. F. Baker

204 (A--photo of type, B--photo of type, Ca--isotype, D--photo of type, E--2 isotypes, F--photo of type, G--photo of type, K--isotype, Mi--isotype, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type), 658 (N--photo, Z--photo); Chontales: Seemann 87 (Bm, Z--photo). COSTA RICA: Guanacaste: Tonduz s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 13,629] (B--2, Bm, P); San José: Ørsted 11,176 (Cp); Tonduz 13,629 (K). PANAMA: Panamá: P. C. Standley 29,797 (N--2 photos, Z--2 photos).

71. AEGIPHILA MARTINIOENSIS Jacq.

An additional synonym for this species is Aegiphila minima W. Wright, in herb. The species has occasionally been misidentified as Feramea occidentalis L. C. Rich., Gatesbaea sp., Boussingaultia sp., Cestrum sp., and Psychotria sp., and specimens have been distributed under those names! There is no specimen of this species in the Linnean Herbarium, although the name Aegiphila martinicensis is often erroneously accredited to Linnaeus. The Funk & Schlim 81 cited below represents the "variabilis" form of the species. Ramage records the vernacular variant "bois cabrit" from St. Lucia. Otero says that it fruits in February and Sandwith describes the fruit as red in color. The species is often attacked by Hobsonia Ackermanni Pat. and by Guignardia prominens Earle [Laestadia prominens (Earle) Sacc. & D. Sacc.]. The Legit Anonymus ante ann. 1840 s.n., cited below, is anomalous in its coarsely dentate lower leaf-blades and fine pubescence throughout. The "Spruce s.n." cited on page 476 of my monograph as representing this species is an error and should be deleted, and the "Orebs s.n." cited on page 382 should read "Krebs s.n.". The Britton & Cowell 594 cited on pages 383 and 472 as var. oligoneura is better regarded as representing a small-leaved form of the true species. The Hort. Kew. s.n. is strongly like A. filipes, but the specimen is only a fragmentary one and cultivated specimens of A. martinicensis are in general similarly anomalous in leaf-texture and shape.

Additional citations: CUBA: Havana: De la Ossa s.n. [1825] (Dc--2). JAMAICA: Bertero 2046 (B); Swartz s.n. (Z--photo); W. Wright s.n. (Bm). PORTO RICO: Britton, Britton, & Brown 6786 (Ob); Collector undesignated s.n. (P); Cook & Collins 291 (W); A. A. Heller 4670 (B, B--photo, Ob, D--photo, Ed, Es, Le, Mi, N--photo, W, W--photo, Z--photo), 6444 (Es); Heller & Heller 276 (K, Z--2 photos), 825 (B, Z--photo), 964 (K, Z--photo); Hioram s.n. [Río Piedras] (P); Ledru s.n. (Ed); Otero 78 (N, N--seed); Plé 172 (P); H. N. Ridley s.n. (Ob--3); Riedle 202 (P), s.n. [Herb. A. L. Jussieu 5034a] (P); Sinteniz 1183 (B), 1295b (B), 2674 (B, Bm, K), 6492 (W), s.n. [1895] (Ol); Stahl 293 (B), 454 (B), 995

(B). ST. JOHN: Orsted s.n. [1846] (Cp--2). ST. THOMAS: Collector undesignated s.n. (P); Krebs s.n. (Z--photo); Riedlé s.n. (P). ST. EUSTACHE: Boldingh 246 (Le), 386a [189] (Ut), 894 [410] (Ut). ST. CROIX: Benzon 127-3713 (Cp); Britton, Britton, & Kemp 114 (Cb, Z--photo); Collector undesignated s.n. (Z--photo); Herb. Univ. Christian. s.n. (Ol); Ravn s.n. (Cp); L. C. Richard s.n. (P); J. B. Thompson 239 (A--photo, Cb, F--photo, G--photo, N, Z--photo), 503 (G--photo), 719 (Z--photo). ST. KITTS: Britton & Cowell 116 (Z--photo), 120 (Z--photo), 332 (B, K, Z--photo), 594 (B, K, N); Eggers 133 (Z--photo), s.n. [Decbr. 1882] (B, Vu); Forsström s.n. (S--2, Z--photo). ANTIGUA: Ponthieu s.n. [Ind. occid.] (Cb--2); Rose, Fitch, & Russell 3341 (B, Z--photo); Wulfschlägel 423 [Herb. Monac. 1037] (B, Mu), 424 [Herb. Monac. 1039] (Mu). MONTSERRAT: Ryan s.n. (Cp--6); Shafer 162 (Cp), 197 (Z--photo). GUADELOUPE: Badier 176 (Dc); Duchassaing s.n. [Guadeloupe] (B, P--3, V, Z--photo); R. P. Dusa 303 (P), 2389, in part (E, Z--photo); Forsström s.n. (S); Funck & Schlim 81 (Cb, P); Grisebach s.n. (E, K); Herb. Lamarck s.n. [Guadeloupe] (P); Hermínier s.n. (X--4); Perrotet s.n. [18 Juin 1824] (Cb), s.n. [Juillet 1841] (Bm); Ficard s.n. (P); Quentin 17 (P); Read s.n. (B); L. C. Richard s.n. (N--photo, P, Z--photo); Stehlé 1247 (N). DOMINICA: G. P. Cooper 60 (Mi), 80 (N), 167 (Mi); Eggers 501, in part [Herb. Monac. 3822] (B--2, Cb, Le, Mu, Vu), 786 (B, Cp); Imray 85 (K), 119 (Z--photo), 420 (K); Kraus 273 (Ed); Nicholls 94 (B); Ramage s.n. [April 24, 1888] (Bm, K), s.n. [Aug. 22, 1888] (Bm), s.n. (B). MARTINIQUE: Bélanger 260 (Cb--2), 290 (P), 571 (P); Collector undesignated s.n. (Cp); R. P. Dusa 1966 (B, Z--2 photos), 2389, in part (B--2); Hahn 125 (Bm, Br, Cb--5, K, Le, P), 491 [Herb. Monac. 1448] (B, Bm, Cb--2, K--2, Le, Mu, P--3, Us); Isert 87 (Op); Jacquin s.n. (Bm--type); Kohaut s.n. (B); Plée s.n. [Martinique] (P--3, Z--photo); Sieber Fl. Mart. 78 [Herb. Monac. 1035] (B--2, Bm, Cp, E, K, Mu, X); Terrasson 62 [Herb. A. L. Jussieu 5034b] (P--2). ST. LUCIA: Lambert s.n. (Dc); Lée s.n. [Dec. 2, 1887] (W); Ramage s.n. (B), s.n. [Sept. 23, 1888] (K). BARBADOS: Eggers 7153 (B, Le); Sandwith s.n. [Barbados] (K); Waby 72 (B, K, W); Warming 134 (Cp, Z--photo); W. Wright s.n. (Br). ST. VINCENT: Caley s.n. [Jan. 1823] (Cb); Collector undesignated s.n. [Aug. 1824] (Z--photo); Eggers 6617, in part (P); Guiliding s.n. (B); Smith & Smith 336 (B, Bm, Ed, Z--photo), 1801 (B, Z--photo). GRENADA: W. E. Broadway 142 (B), 1410 (B), s.n. [St. George's] (A, B--photo, E, G--photo, Z--3 photos), s.n. [Mount Parnassus, June, 1906] (E--2), s.n. [Oct. 31, 1905; Hort. Thenensis I.4507] (Br), s.n. [St. Paul's] (Ed--2, Mi), s.n. [Year 1906?] (E); Eggers 6049 (B, P, Z--photo); G. W. Smith 93 (B). TRINIDAD: W. E. Broadway s.n. [River Estate] (B--photo, D--photo, N--photo, W--photo); Sieber Fl. Trinit.

85 [Herb. Monac. 1036 & 1449] (B--2, Cb--2, Dc, E, Ed--2, Le, Mu--2, V--2, Z--7 photos). WEST INDIES: Island undesig-nated: "B. S." s.n. (K); Collector undesigned 426 (Us), s. n. (Cb, P); Forster s.n. ["India"] (Ed); Forsyth s.n. (Dc); Herb. Adanson s.n. (P--7); Herb. Puerar s.n. [1824] (Dc); Ponthieu s.n. [Ind. occid.] (Bm); West s.n. (Dc). PANAMA: Bocas del Toro: G. P. Cooper 571 (K, W, Z--photo). COLOMBIA: Méta: Pennell 1650 (Z--photo). VENEZUELA: Zulia: Mocquerys 910 (P--3); H. Pittier 10,533 (B, Cb, Z--photo); Mérida: W. E. Broadway 319 (G, Z--photo), 479 (G). FRENCH GUIANA: Leb-lond 283 (Cb). CULTIVATED: England: Cult. Palm Stove Kew s. n. (Z--photo); Hort. Boyton s.n. [A. B. Lambert, 1807; Lord Seaforth, West Indies] (B--photo, Cb--2, N--fragment, N--2 photos, S--photo, Z--2 photos), s.n. [A. B. Lambert, 1808; Lord Seaforth, West Indies] (Cb); Hort. Kew s.n. [1785] (Bm); Hort. Liverpool s.n. (K); France: Jard. Bot. Paris s. n. [de l'isle de Cuba] (Cb); Jard. Malmaison s.n. (P); Perrottet s.n. [Jardin des Pl. de Paris, 1818] (Cb); Neth-erlands: Herb. Persoon s.n. (Le); Belgium: Collector undes-igned s.n. (Br); Nyst s.n. (Br); Germany: Hort. Monac. s. n. [Herb. Monac. 1038] (Mu); Ceylon: Hallier f. C.240 (Le). LOCALITY OF COLLECTION UNDESIGNATED: Baudin s.n. (P); Herb. Golsmann s.n. (N--photo, Z--photo); Herb. Hooker s.n. (B); Herb. Hornemann s.n. [Ex Ind. occid.?] (Cp--2); Herb. A. L. Jussieu s.n. (P--3); Herb. Liebmann s.n. (Op); Herb. Vahl s.n. (Op); Legit Anonymus ante ann. 1840 s.n. (Ut); Mus. Bot. Berol. s.n. ["Bras.?"] (N--photo, Z--photo). ILLUSTRATIONS: Copy of Andr. Bot. Rep. t. 578 (Ba); Lamarck, illus-tr. 1: t. 70, f. 1. 1791 (B); Unidentified illustration (N).

71a. AEGIPHILA MARTINICENSIS var. OLIGONEURA (Urb.)Moldenke

Hahn records the vernacular variant "bois cabrite" from Martinique. The Britton & Cowell 594 cited on page 383 of my monograph is better considered to represent a form of typical A. martinicensis. The "Eggers 6617" cited on pages 383 and 473 should read "Eggers 6617, in part", since some sheets of this collection are typical A. martinicensis.

Additional citations: JAMAICA: W. Harris 8166 (A--photo of isotype, B--type & isotype, B--photo of isotype, Bm--isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--photo of isotype, N--isotype, N--2 photos of isotypes, W--photo of isotype, Z--photo of isotype). DOMIN-ICA: Eggers 501a (Br, P); Lloyd 606 (N--photo, Z--photo); MARTINIQUE: Hahn 1236 (B, Bm, Br, Cb--2, N--2 photos, P--2, X, Z--2 photos). ST. VINCENT: Eggers 6617, in part (B); Smith & Smith 336a (N--photo, Z--photo), 753 (Bm, N--photo, Z--photo). LOCALITY OF COLLECTION UNDESIGNATED: "West Ind-ies, Nov. 17--17" (N--photo, Z--photo).

38. AEGIPHILA MEDITERRANEA Vell.

This binomial is sometimes erroneously to Turczaninow. The type specimen of A. cestrifolia has been examined in the herbarium of the British Museum. The Rodriguez specimen cited below bears a label inscribed "Misiones: Santa Ana", but probably this is meant to be the Santa Anna on Grande Island, Rio de Janeiro, and not a locality in Misiones, Argentina, which would be far out of the known range of the species.

Additional citations: BRAZIL: Rio de Janeiro: Boog s.n. (Z--photo); G. Gardner 100 (Bm--2, Ob--2, Ed--2, F, K, N--3 photos, P, V, Z--3 photos); Glaziou 1546 (Br, Cp, P), 11,337 (Br, Ob, Cp, K, P--2, Z--photo); Martius 166 [Herb. Monac. 1040] (Ma); Miers 3096 (Ob); Pohl s.n. [Herb. Imp. Vien. 151] (K, Z--photo); Riedel 0,31 (L), 0,37 (L); Riedel & Luschnath 1005 (L--2, N); Rodriguez s.n. [Lillo 10,448] (G); Schenck 2109 (N--photo, Z--photo); Schott 4916 (Cb, V, Z--photo); Swainson s.n. (Z--photo); Ule 4854 (B); Widgren 1151 (Us, Z--photo), 1223 (Br), s.n. (A--photo, B--photo, D--photo, F--photo, G--photo, N--photo, W--photo, Z--photo). CULTIVATED: Cameroons: H. Winkler 628 (B); Versuchsanstalt Kamerun 270 (B, Us).

12. AEGIPHILA MEDULLOSA Moldenke.

The type collection of this species is Saint-Hilaire C.50 and not "Co. 50" as inaccurately written in my monograph.

Additional citations: BRAZIL: Rio de Janeiro: Riedel & Lund 0,30 (L--2, N--fragment, Z--2 photos); Saint-Hilaire C.50 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, S--photo of type, W--photo of type, Z--photo of type).

65. AEGIPHILA MEMBRANACEA Turcz.

This species has occasionally been confused with the genus Clerodendrum and some herbarium specimens have been distributed under that name!

Additional citations: COLOMBIA: Chocó: Triana 3713, in part (Bm). SURINAM: Hostmann 89 (A--photo of isotype, B--isotype, B--photo of isotype, Bm--2 isotypes, Ob--isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--2 isotypes, N--2 photos of isotypes, P--isotype, Ut--isotype, V--2 isotypes, W--photo of isotype, Z--3 photos of isotypes); Hostmann & Kappler 89, in part [Herb. Monac. 1188] (Ma). FRENCH GUIANA: Benoist 740 (P), 786 (P), 787 (P--3); Jelski s.n. [Cayenne] (B); Mélinon 83 (P), 89 (N--photo, Z--photo), 111 (P), 433 (P, Z--photo), 436 (P), 486 (P), s.n. [in 1864] (Bm, Z--2 photos), s.n. [in 1877] (Bm, Br, Ob, F, K, N--photo); Sagot s.n. (P--2); Wachenheim 100

(Bm, F, P--2), 188 (P), s.n. [environs de Godebert] (K, Z--photo). VENEZUELA: Falcon: Jahn 384 (Z--photo). PERU: Loreto: Tessmann 4666 (B).

83. AEGIPHILA MOLLIS H.B.K.

Additional synonyms are Cornutia velutina Hayek in Engl. Jahrb. 42: 172 (1908) and Aegiphila salutaris var. lutea Moritz, in herb. The type of Cornutia velutina was collected by Friedrich Carl Lehmann (No. 6692) in El Cauca, Colombia, and several isotypes have been examined. The collection matches typical material of Aegiphila mollis perfectly. The type of A. salutaris [Bonpland 983] and another cotype of A. Mutisii [Bonpland s.n.] have now been examined. Neither of these can be separated from A. mollis. Dugand reports that the present species is a frequent shrub in second-growth, inhabiting clayey and stony soil. He describes it as a shrub or shrubby tree, 3--5 m. tall, with a trunk to 15 cm. in diameter, grayish rugose bark, and abundant white flowers, the corolla soon falling off. The Humboldt & Bonpland s.n. specimen from the Berlin herbarium, cited in my monograph as the type, is actually only an isotype. The Venezuelan state Anzoategui is misspelled "Anzoatequi" on page 405.

Additional citations: COLOMBIA: Atlántico: Dugand 101 (F, Y), 469 (F, Y), 639 (Y); Elias 1102 (N--2, W); Magdalena: H. Smith 868 (Bm, Br, Ob--2, E, Ed, K, Le, N, P, Ut, Z--photo), 870 (E, G--photo, K, Z--photo), 1860 (Bm, Ob--2, E, K, P, Z--photo); Purdie s.n. [Santa Marta] (K, N--photo, Z--2 photos); Cundinamarca: André K.1554 (K); Bonpland s.n. (N--photo, P--2); Hartweg s.n. [Fusagasuga, near Bogotá] (K, Z--photo); Mutis 423 (B--photo, F--photo, G--photo, N--photo, Z--photo); Triana 2082 (Bm--2, Br, Ob--2, Ed, P), 3713, in part (Bm); Bolívar: Elias 581 (Z--photo); Tolima: André K.1556 (K); El Cauca: Karsten s.n. [Papayan] (A--photo, B--photo, D--photo, F--photo, G--photo, N--photo, W--photo, Z--photo); Lehmann 6692 (B, B--descr., F--photo, F, K--2, L, W); H. Pittier 626 (Z--photo); Department undetermined: Goudot 2 (P). VENEZUELA: Lara: Saer 723 (Ve); Carabobo: H. Pittier 7910 (G); Aragua: Fendler 843 (G, N--photo, Z--2 photos), 2052 (Z--photo); Vogl 1177 (Mu), 1179 (Mu), 1180 (Mu), 1181 (Mu--2), 1183 (Mu); Miranda: H. Pittier 7855 (G); Guarico: Geay s.n. [Guarítico] (P); Sucre: Funck 643 (Ob, P, V); Moritz 363 (Bm); Anzoategui: Otto 856 (B, K, Z--2 photos); Monagas: Moritz 1910 (Bm); Amazonas: Bonpland 983 (N--photo, P, Z--photo); State undetermined: Chaffanjon 245 (P); Eggers 13,464 (Op, Z--photo); Humboldt & Bonpland s.n. [Woods of the Orinoco] (A--photo of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, N--photo of isotype, W--photo of isotype, Z--photo of isotype). BOLIVIA: Santa Cruz: D'Orbigny 1086 (Ob);

Steinbach 3168 (Z--photo). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Baillon s.n. (P); Lehmann B.T.705 (Le, N--photo, V, Z--photo). ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. Pl. 2: t. 130. 1817 (P).

83a. *AEGIPHILA MOLLIS* var. *INTERMEDIA* Moldenke.

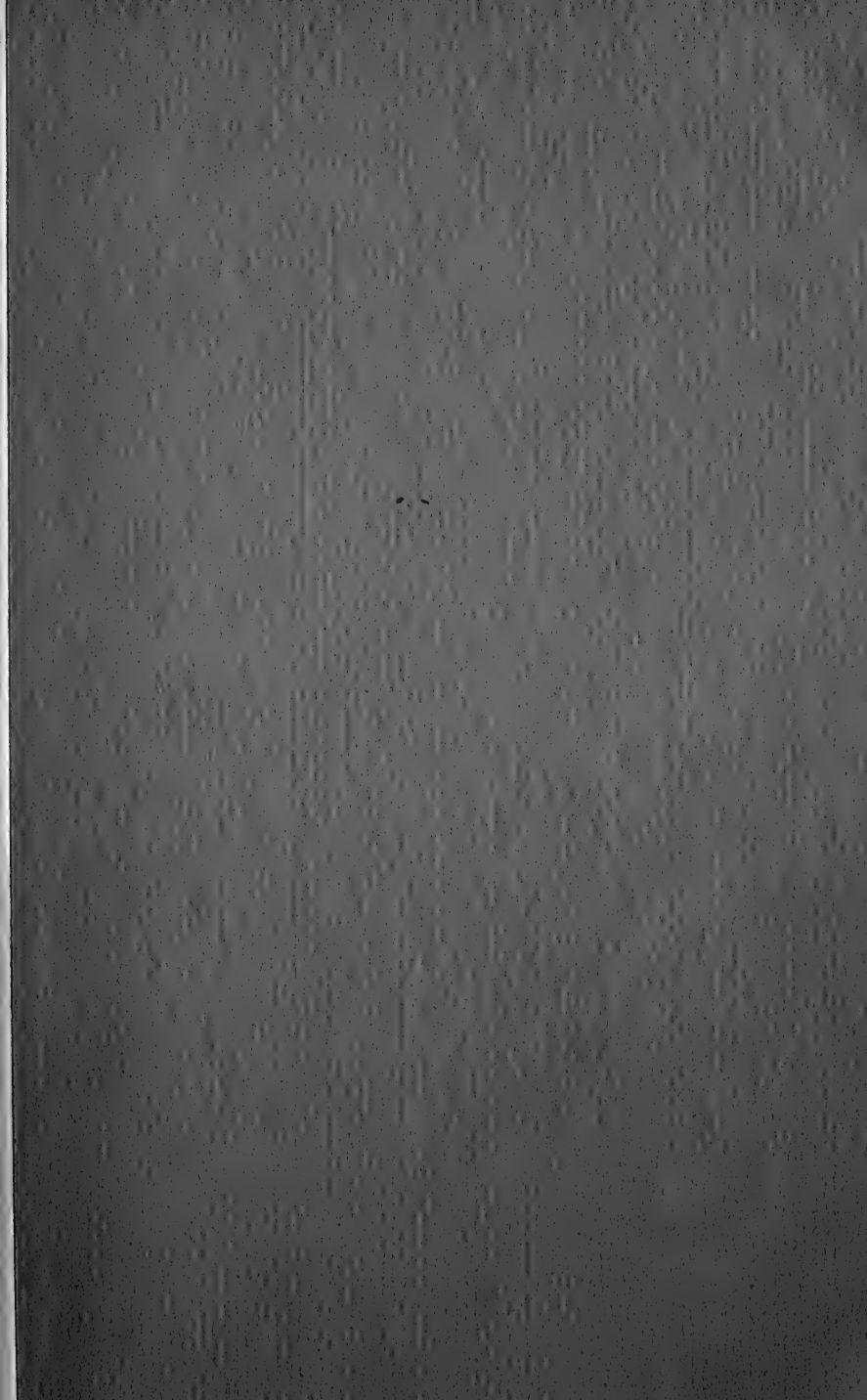
Additional citations: COLOMBIA: Magdalena: H. H. Smith 329 (A--photo of type, B--photo of type, Bm--isotype, Br--isotype, Ob--2 isotypes, D--photo of type, E--isotype, Ed--isotype, G--photo of type, K--isotype, K--photo of type, N--photo of type & 2 photos of isotypes, P--isotype, W--photo of type, Z--photo of type & 2 photos of isotypes), 869 (N--photo, Z--photo); Bolívar: Killip & Smith 14,296 (N--photo, Z--photo).

13. *AEGIPHILA MONSTROSA* Moldenke.

The "*Aegiphila fasciculata* Donn. Sm." which Standley describes in *Field Mus. Pub. Bot. 10: 334--335* (1931) and illustrates on plate 57 is *A. monstrosa*, not *Dermatocalyx parviflorus* Griseb. as erroneously stated by myself in *Phytologia 1: 200* (1937). The Cook & Griggs 521 [U. S. Nat. Herb. 408,225] said to be *A. fasciculata* by J. D. Smith in *Bot. Gaz. 57: 425* (1914) is actually *A. monstrosa*. Schipp reports that the species under discussion is a small tree growing in forest shade, that it is quite common, and that the flowers are highly perfumed. The vernacular name "hulub" has been recorded from British Honduras.

Additional citations: GUATEMALA: El Petén: Lundell 1492 (Mi); Alta Verapaz: Cook & Griggs 521 (W); H. V. Johnson 520 (N--photo, Z--photo); Izabal: P. C. Standley 25,114 (Z--photo); Department undetermined: Skinner s.n. (K). HONDURAS: Atlántida: P. C. Standley 52,717 (N--2 photos, Z--3 photos), 53,176 (B--photo, D--photo, N--2 photos, P--photo, S--photo, W--photo, Z--2 photos); Cortés: Carleton 422 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type). BRITISH HONDURAS: H. H. Bartlett 11,941 (Mi), 13,011 (Mi); Gentle 263 (Mi, N), 404 (Mi, W), 948 (A, E, I, Mi, N, S--2); Lundell 146 (K, Mi); Schipp 1083 (A, Bm, Ca, Ob, E, K, Mi, N, S).

- (1) *Brittonia* 1: 245--477. 1934.
- (2) *Phytologia* 1: 182--208. 1937.
- (3) Houard, *Zoocéd. Pl. Amer. Sud* 351--352. 1933.
- (4) Houard, *Zoocéd. Pl. Amer. Sud* 344. 1933.



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

September, 1937

No. 7

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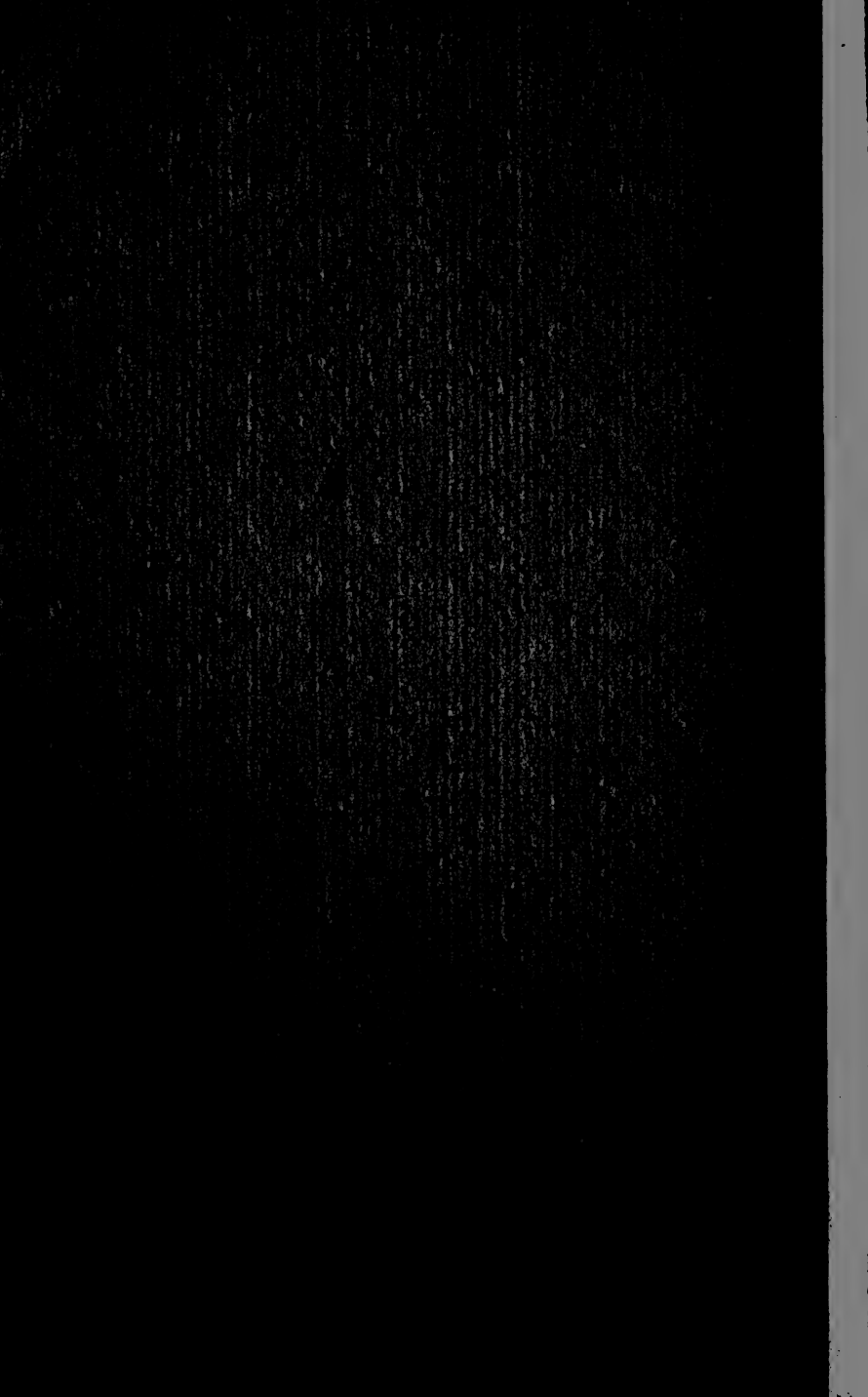
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Published by H. A. Gleason and Harold N. Moldenke

The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number: 50 cents; per volume \$5.00 in advance.

Vol. I, number 6, was issued June 14, 1937.



STUDIES OF MEXICAN AND CENTRAL AMERICAN PLANTS -- III (a)

C. L. Lundell

Of the six novelties described, two are from the writer's 1936 collections on the Carnegie-Michigan expedition to British Honduras. The other four were discovered in the highly interesting and valuable Mexican collections of Mr. Eizi Matuda and Professor C. Conzatti. All the specimens cited are in the Herbarium of the University of Michigan.

PICRAMNIA MATUDAI Lundell, sp. nov.

Arbor, ramulis, petiolis, et pedunculis dense fulvopubescentibus. Folia magna, 25--45 cm. longa; foliolis 3--9, alternis, ovatis, lanceolato-oblongis, vel lanceolato-ellipticis, 10--18.5 cm. longis, 4.2--6.8 cm. latis, apice acuminatis, acumine obtuso vel acutiusculo, basi rotundatis, obtusis, vel cuneatis, supra glabris, subtus fulvopubescentibus; petiolulis crassis, dense pubescentibus, 4--5.5 mm. longis. Inflorescentiae axillares, 15--25 cm. longae. Flores masculi glomerato-racemosi, glabri; pedicellis 1--1.2 mm. longis. Sepala 3, raro 4, latissime ovata vel ovato-orbicularia, 1.3--1.8 mm. longa, integra vel eroso-dentata. Petala 3, raro 4, oblonga vel oblanceolato-oblonga, 2--2.3 mm. longa. Stamina 3, raro 4, 3.5--3.9 mm. longa; filamentis crassis. Flores femineos non vidi. Fructus obovoideus, ca. 1.5 cm. longus.

A tree with fulvous and copiously pubescent twigs, petioles, and peduncles; leaves large, fulvous, as much as 45 cm. long; leaflets somewhat inequilateral at base, alternate, subcoriaceous, 3 to 9, the lower ones ovate, the upper ones lanceolate-oblong or lanceolate-elliptic, 10 to 18.5 cm. long, 4.2 to 6.8 cm. wide, apex acuminate, the acumen obtuse or acutish, base of lower leaflets rounded, base of upper leaflets obtuse to cuneate, glabrous above, persistently pubescent beneath, costa and lateral nerves nearly plane above, prominent beneath; petiolule thick, densely pubescent, 4 to 5.5 mm. long; inflorescence axillary on old wood, the rachis simple, 15 to 25 cm. long, densely fulvous-pubescent; staminate flowers glomerate-racemose, glabrous; pedicels 1 to 1.2 mm. long; sepals 3, rarely 4, broadly ovate or ovate-orbicular, 1.3 to 1.8 mm. long, entire or erose-dentate; petals 3, rarely 4, oblong or oblanceolate-oblong, 2 to 2.3 mm. long; stamens 3, rarely 4, 3.5 to 3.9 mm. long, the filaments thick; fruits glabrous, obovoid, about 1.5 cm. long; fruiting pedicels 2 to 3 mm. long, pubescent.

Type in the Herbarium of the University of Michigan, Eizi

Matuda 428, collected on Mt. Orando, Chiapas, Mexico, December 17, 1936.

P. Matudai is a well-marked species distinguishable at once from the other species with three-parted flowers by its large pubescent leaves and axillary inflorescences borne on old wood.

Notes on the species of Exothea

Heretofore only two species have been known in the genus Exothea. The widespread E. paniculata (Juss.) Radlk. occurs in Florida, the West Indies, and Central America. E. copalillo (Schlecht.) Radlk. is restricted apparently to southern Mexico. E. diphylla (Standl.) Lundell, an endemic tree in the Yucatan Peninsula, is also referable to the genus. The three species may be satisfactorily separated as follows:

Leaflets 2; petioles less than 1 cm. long.....1. E. diphylla
Leaflets 2 to 8 (usually 4); petioles generally
more than 2.5 cm. long.

Leaflets entirely glabrous.....2. E. paniculata

Leaflets barbate beneath in the axils of
the nerves.....3. E. copalillo

1. EXOTHEA DIPHYLLA (Standl.) Lundell, comb. nov.

Talisia diphylla Standl., Field Mus. Bot. 8: 21. 1930.

A tree reaching a height of 20 meters; flowers white. Occasional in sapodilla forest, and in marginal forest surrounding pine lands; endemic in the Yucatan Peninsula.

Specimens examined: MEXICO: Campeche: Tuxtepec, Lundell 1347. BRITISH HONDURAS: Corozal District: Gentle 646. Belize District: Maskall Pine Ridge, Gentle 1147; vernacular name "wild kenep".

The flowers of E. diphylla are very similar in structure, size and pubescence to the flowers of E. paniculata and E. copalillo. In fact, the flowers of all three species are strikingly alike.

2. EXOTHEA PANICULATA (Juss.) Radlk.

A medium-sized tree reaching a diameter of 30 cm.; bark smooth and gray; flowers cream-colored; fruits reddish-brown. Occasional in forest; Florida, West Indies, British Honduras, and Guatemala.

Specimens examined: FLORIDA: No Name Key, J. H. Simpson in 1891. Without locality, A. P. Garber in 1877. WEST INDIES: Bahamas: New Providence, Wm. Cooper 1 in 1859. BRITISH HONDURAS: Toledo District: Pueblo Viejo, Schipp 1263; Camp 32, British Honduras-Guatemala boundary survey, Schipp 1266.

GUATEMALA: Department of Petén: Uaxactun, Bartlett 12230, 12560. Department of Santa Rosa: Malpais, Heyde and Lux (Donnell Smith 6294).

3. *EXOTHEA COPALILLO* (Schlecht.) Radlk.

A medium-sized tree; flowers white. In forest, Vera Cruz, Jalisco, and San Luis Potosi.

Specimens examined: MEXICO: Jalisco: Santa Cruz de Vallarta, Mexia 1249. Vera Cruz, Purpus 15240.

MELIOSMA MATUDAI Lundell, sp. nov.

Arbor glabra. Folia coriacea, integra, petiolis 6--10 mm. longis; laminis anguste lanceolato-oblongis, 7--12 cm. longis, 1--1.9 cm. latis, apice acuminatis, base longe acuminatis. Inflorescentiae terminales, paniculatae, 6--11.5 cm. longae. Pedicelli 1--3.5 mm. longi. Sepala 5, inaequalia. Petala 5, inaequalia, 3 exteriora suborbicularia, ca. 2 mm. longa, 2--3 mm. lata, 2 interiora minuta, bifida, puberula. Staminodia 3. Stamina 2. Discus ovarium subaequans, margine denticulis linearibus obsitus. Ovarium 2-loculare. Stylus ovarium subaequans.

A tree, glabrous throughout; branchlets slender; leaves clustered at apices of branchlets, subopposite, coriaceous; petioles slender, 6 to 10 mm. long; leaf-blades very narrowly lanceolate-oblong, 7 to 12 cm. long, 1 to 1.9 cm. wide, entire, apex acuminate, base long-acuminate, costa prominent on both surfaces, reticulate-veined, paler beneath; inflorescence terminal, paniculate, 6 to 11.5 cm. long; flowers pedicellate, the pedicels 1 to 3.5 mm. long; prophylla oblong-elliptic, about 1 mm. long, ciliolate, deciduous very early; sepals 5, unequal, ciliolate, the outer 2 broadly ovate, the inner 3 suborbicular, larger, about 1.4 mm. long; petals 5, unequal, the 3 outer (opposite the staminodia) depressed-orbicular, about 2 mm. long, 2 to 3 mm. wide, the 2 inner (adnate to base of fertile filaments) minute, deeply bifid, puberulous; fertile stamens 2; anthers longitudinally dehiscent; disk thin, nearly equaling ovary in length, bearing slender linear teeth; ovary glabrous, 2-celled; style glabrous, equaling or slightly exceeding ovary in length; stigmas connate.

Type in the Herbarium of the University of Michigan, Eizi Matuda 526, collected on Mt. Orando, Chiapas, Mexico, December 19, 1936.

M. Matudai is closely related to *M. idiopoda* Blake from which it differs obviously in having smaller and much narrower leaves and glabrous panicles. It appears to be related to *M. oaxacana* Standl. also, but may be distinguished readily from that species by its much smaller flowers, narrower

leaves, and the absence of pubescence.

SOUROUBEA TRIANDRA Lundell, sp. nov.

Frutex epiphyticus, glaber, 5-metralis. Folia subcoriaceae, petiolis 4--8 mm. longis; laminis oblanceolatis vel oblanceolato-obovatis, 5.5--10.5 cm. longis, 2--4 cm. latis, apice rotundatis vel obtusis, minute apiculatis, basi cuneatis. Inflorescentiae terminales, racemosae, 8--16 cm. longae, ca. 2.2 cm. latae, multiflorae, pedicellis 7--9 mm. longis; bractea sub calyce inserta, tubuloso-cylindrica, 8--10 mm. longa, breviter stipitata; ostiolo lateraliter breviter 2-auriculato; bracteolis 2. Sepala 5, suborbicularia, 1.2--1.8 mm. longa. Corolla ca. 4.5 mm. longa, ad mediam partem gamopetala, lobis 3 vel 4, apice obtusis. Stamina 3 vel 4, filamentis crassis, ca. 2.1 mm. longis, basi complanatis, intus ad corollae basin applicatis, margine inter se contiguis, apice attenuatis; antheris ovato-cordatis, ca. 1 mm. longis. Ovarium 3- vel 4-loculare.

An epiphytic shrub 5 meters high, glabrous throughout; branchlets slender, 2 to 3 mm. in diameter; leaves subcoriaceous; petioles canaliculate, 4 to 8 mm. long; leaf-blades oblanceolate or oblanceolate-obovate, 5.5 to 10.5 cm. long, 2 to 4 cm. wide, apex rounded or obtuse, minutely apiculate, base cuneate, costa prominent beneath, the primary nerves inconspicuous; inflorescence terminal, erect, racemose, 8 to 16 cm. long, about 2.2 cm. wide, many-flowered; pedicels slender, 7 to 9 mm. long; bract tubular-cylindrical, 8 to 10 mm. long, suspended obliquely from base of calyx, short stipitate (the stipe about 1.8 mm. long or shorter), the aperture laterally 2-auriculate, the auricles very short; bracteoles 2, ovate-orbicular, about 1.2 mm. long, closely appressed to calyx; sepals 5, suborbicular, 1.2 to 1.8 mm. long, imbricate; corolla about 4.5 mm. long, 3- or 4-lobed to the middle, splitting irregularly at anthesis and reflexed, the lobes obtuse; stamens 3 or 4, attached to base of corolla; filaments thick, broad and flattened below with the margins touching, narrowed above, about 2.1 mm. long (including portion adnate to corolla); anthers ovate-cordate, obtuse, about 1 mm. long; ovary 3- or 4-celled, ovoid; stigma sessile.

Type in the Herbarium of the University of Michigan, C. L. Lundell 6492, collected in advanced forest on limestone hill near Cohune Ridge, El Cayo District, British Honduras, July 13, 1936.

Additional specimens examined: GUATEMALA: Puerto Barrios, Dean 6020.

S. triandra is remarkable in having flowers with corolla 3- or 4-lobed, 3 or 4 stamens, and ovary 3- or 4-celled. As far as the writer has been able to determine from published

descriptions and dissections of flowers, all the other species known in the genus regularly have 5-parted flowers. In both the type collection and the Deam collection, the flowers of S. triandra consistently differ in this respect. A majority of the flowers have only 3 corolla lobes, 3 stamens, and a 3-celled ovary. The bract is typical of the genus.

S. triandra is closely related to S. exauriculata Delp. Aside from the floral differences already mentioned, it may be distinguished further from that species in its much smaller flowers, glabrous inflorescence, narrower leaves, short-stipitate bract attached at base of calyx, and in other noteworthy characters.

The Deam collection from Puerto Barrios, Guatemala, was identified by J. Donnell Smith as Ruyachia mexicana Baill., a species regarded as a synonym of S. exauriculata by Wittmack (Fl. Bras. 12: 254. 1879) and by Hemsley (Biol. Centr. Amer. Bot. 1: 92. 1879). In the original description of R. mexicana, the flowers are described as having 5 stamens and a 5-celled ovary, hence S. triandra differs in those important and in other minor characteristics.

RUYSCHIA ENERVIA Lundell, sp. nov.

Frutex epiphyticus, glaber, 3-metralis. Folia coriacea, oblanceolata vel oblanceolato-oblonga, 8--12 cm. longa, 2--4.2 cm. lata, apice obtuso-apiculata, basi obtusiuscula vel rotundata, costa planiuscula, nervis lateralibus inconspicuis; petiolis 3--8 mm. longis. Inflorescentiae terminales, racemosae, pauciflorae, ca. 8 cm. longae, glabrae, pedicellis 3--4.5 mm. longis; bractea sub calyce inserta, intus convexa, extus complanata, tumida, apiculata, 3--4.5 mm. longa, 3--4 mm. lata, ca. 2 mm. crassa; bracteolis 2. Sepala 5, coriacea, imbricata, suborbicularia, 4--4.5 mm. lata, 2--2.5 mm. longa, apice rotundata. Petala 5, imbricata, coriacea, libera. Stamina 5, filamentis basi complanatis, lanceolatis, intus ad corollae basin adnatis. Ovarium subglobosum, 5-costatum, 2-loculare.

A glabrous epiphytic shrub 3 meters high; branchlets 3 to 5 mm. in diam.; leaves coriaceous, opaque, oblanceolate or oblanceolate-oblong, 8 to 12 cm. long, 2 to 4.2 cm. wide, apex obtuse-apiculate, base obtusish or rounded, costa plane or nearly so, the lateral nerves invisible beneath, absent or faintly visible above, glands few and scattered, margin revolute; petioles canaliculate, stout, 3 to 8 mm. long; inflorescence racemose, terminal, few-flowered, about 8 cm. long, glabrous; pedicels stout, 3 to 4.5 mm. long; bract attached at base of calyx, sessile, solid, convex inside, flattened or slightly concave outside (resembling bract of R. clusiaefolia), apiculate, 3 to 4.5 mm. long, 3 to 4 mm.

wide, as much as 2 mm. thick; bracteoles 2, coriaceous, depressed-orbicular, about 3 mm. wide, 1.6 mm. long, apex rounded, appressed to calyx; sepals 5, coriaceous, imbricate, suborbicular, 4 to 4.5 mm. wide, 2 to 2.5 mm. long, apex rounded; petals 5, imbricate, coriaceous, free, (in mature unopened buds ovate-elliptic, about 6 mm. long, 3.9 mm. wide); stamens 5, adnate at base of corolla; filaments (in unopened buds) flattened, lanceolate, about 1.2 mm. wide at base, narrowed above; ovary subglobose, 5-ribbed, 2-celled, the ovules numerous; stigma subsessile, capitate.

Type in the Herbarium of the University of Michigan, G. L. Lundell 6308, collected in advanced forest on the Valentin-Retiro road, El Cayo District, British Honduras, June 30, 1936.

R. enervia is a noteworthy species related to R. clusiae-folia Jacq. of the West Indies and South America from which it differs in having inconspicuously nerved oblanceolate-oblong leaves, much shorter racemes, shorter pedicels, and a capitate stigma.

As far as the writer has been able to determine, this is the first Ruyschia known from continental North America. The species previously reported as belonging to Ruyschia are referable to Souroubea.

MYRTUS MATUDAI Lundell, sp. nov.

Frutex ramosissimus. Folia coriacea, petiolis 3--5 mm. longis; laminis ellipticis, 1.5--3 cm. longis, 0.6--1.3 cm. latis, apice acutis vel breviter acuminatis, basi acutis. Flores ad axillas solitarii. Pedicelli 10--13 mm. longi. Prophylla sub calyce inserta linearia 4--7 mm. longa. Calyx ca. 6 mm. longus, 5-partitus; lobis lanceolatis, 3--4 mm. longis, acuminatis. Petala orbicularia, 3.9--4.5 mm. longa. Ovarium 3-loculare.

A much-branched shrub; branchlets slender, covered with whitish hairs; leaves coriaceous; petioles 3 to 5 mm. long; leaf-blades elliptic, 1.5--3 cm. long, 0.6--1.3 cm. wide, apex acute or short-acuminate, base acute, costa impressed above, prominent beneath, the lateral nerves inconspicuous, glabrous above, paler beneath and at first sparsely pubescent with appressed whitish hairs, punctate, revolute; flowers solitary, axillary; pedicels slender, 10 to 13 mm. long, hairy; prophylla linear, 4 to 7 mm. long, sparsely pubescent beneath; calyx glabrous or nearly so, about 6 mm. long, 5-lobed, the lobes lanceolate, 3 to 4 mm. long, acuminate; petals orbicular, 3.9 to 4.5 mm. long; ovary 3-celled; styles slender, glabrous, about 5 mm. long.

Type in the Herbarium of the University of Michigan, Eizi Matuda 459, collected on Mt. Pasitar, Chiapas, Mexico, December 29, 1936.

Additional specimens examined: MEXICO: Chiapas, Mt. Orando, Matuda S-3.

M. Matudai may be distinguished from M. montana Benth. and related species by its long linear prophylla and long calyx-lobes.

JACQUINIA CONZATTII Lundell, sp. nov.

Arbor. Folia subsessilia, coriacea, rugosa, oblanceolata, 3--5.8 cm. longa, 6--14 mm. lata, apice acutiuscula vel rotundata in aciculum 3 mm. longum desinentia, basi longe attenuata, decurrentia, revoluta. Inflorescentiae terminales, abbreviate racemosae, foliis breviores; pedicellis 6--8 mm. longis. Sepala glabra, suborbicularia, 3--4 mm. longa, minute erosa. Corolla ca. 9.5 mm. longa, ad mediam partem gamopetala, lobis oblongo-obovatis, ca. 3.8 mm. latis, apice rotundatis; staminodiis ovatis, ca. 3.1 mm. longis, 2.1 mm. latis. Stamina libera, filamentis intus ad corollae basin applicatis.

A tree; branchlets striate, green, loosely pubescent with branched hairs; leaves coriaceous, oblanceolate, 3 to 5.8 cm. long, 6 to 14 mm. wide, apex acutish or rounded, spine-tipped, the spine about 3 mm. long, base long-attenuate, decurrent into a short stipe, revolute, rugose, glabrous above except for a few hairs along the costa, pubescent beneath with scattered branched hairs and punctate, costa impressed above, prominent beneath, lateral nerves inconspicuous; inflorescence terminal, short-racemose, shorter than the leaves, 5- to 12-flowered, loosely pubescent; pedicels 6 to 8 mm. long, each subtended at base by a lanceolate, acuminate-cuspidate bract 2 to 3 mm. long; sepals glabrous, suborbicular, 3 to 4 mm. long, minutely erose; corolla infundibuliform, orange-red, minutely puberulous inside at base with gland-tipped hairs, about 9.5 mm. long, lobed to the middle, the lobes oblong-obovate, about 3.8 mm. wide, rounded at apex; staminodia ovate, about 3.1 mm. long, 2.1 mm. wide, obtuse; stamens about 7 mm. long (including portion adnate to corolla); filaments free, adnate to base of corolla, narrowed above, flattened, minutely puberulous at base with gland-tipped hairs; style short, about 1 mm. long.

Type in the Herbarium of the University of Michigan, C. Conzatti 5326, collected near Dominguillo, District of Guicatlan, Oaxaca, Mexico, on April 16, 1937, at an altitude of 700 meters. The species is noteworthy for its narrow oblanceolate rugose leaves.

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(a) Contribution from the Herbarium of the University of Michigan.

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- III

Harold N. Moldenke

The following notes constitute a continuation of those published in *Phytologia* 1: 182--208 and 222--240 (1937).

85. AEGIPHILA MONTANA Moldenke.

Additional citations: COLOMBIA: Huila: Rusby & Pennell 701 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

32a. AEGIPHILA MONTICOLA Moldenke in Fedde, *Repert.* 37: 210--211. 1934.

Tree; branchlets and twigs slender, obtusely tetragonal, furfuraceous; principal internodes 1--2.5 cm. long; leaf-scars borne on short appressed sterigmata 2--3 mm. long; leaves decussate-opposite; petioles slender, 12--15 mm. long, furfuraceous; blades elliptic or elliptic-obovate, 8--12 cm. long, 3--6.1 cm. wide, acute at apex, entire, acute at base, densely punctate above, more or less furfuraceous (especially on the venation) beneath; midrib stoutish, very prominent beneath, slightly so above; secondaries slender, about 8 on each side, arcuate-ascending, prominulent beneath and arcuate-joined near the margins; vein and veinlet reticulation rather sparse; inflorescence axillary; cymes solitary, opposite, to 4 cm. long and 3.5 cm. wide, bifurcate and brachiate, laxly many-flowered; peduncles slender, 1--2 cm. long, furfuraceous; pedicels slender, 1--3 mm. long, furfuraceous; bractlets and prophylla linear, 1--4 mm. long, furfuraceous; calyx obconic, about 5.7 mm. long and 4.1 mm. wide at apex, coriaceous, densely pulverulent, sometimes slightly verruculose, its margin 4-lobed, its lobes truncate, their margins distinctly scarious; corolla infundibular, white, its tube broadly cylindric, about 9.6 mm. long, glabrous, its lobes 4, ovate-lingulate, about 4.5 mm. long and 3.3 mm. wide, acute; stamens 4, inserted about 1.5 mm. below the mouth of the corolla-tube, included; filaments filiform, about 1.3 mm. long; anthers oblong, about 3.6 mm. long and 1.3 mm. wide; pistil included; style about 3.9 mm. long, glabrous; stigma bifid, its branches about 2.6 mm. long and slightly divaricate; ovary tetragonal, about 1 mm. long and wide, glabrous, 4-lobed, 4-celled.

The type of this interesting species was collected by Dr. August Rimbach (No. 118) near Riobamba, "on the outer slope

of the Western Cordillera", Chimborazo, Ecuador, at an altitude of 2500 m., in November, 1932, and is deposited in the herbarium of the Field Museum of Natural History at Chicago. The collector notes that it is a middle-sized tree of forests, with white corollas, 4 broad corolla-segments, and 4 stamens inserted in and included by the corolla-tube. He also states that the flowers are faintly scented and that the wood is not used by the natives of the region. In its general habit this species reminds one greatly of some members of the section Amerina, especially A. grandis. The Schimpff 252 cited below seems to bear strong resemblances to A. bogotensis, and, indeed, one flower was found in its inflorescence with 5 corolla-segments. It would appear that these three species need further study.

ECUADOR: Pichincha: Schimpff 252 (E, N--fragment); Chimborazo: Rimbach 118 [Mus. Yale School of Forestry 22,820] (A--isotype, B--photo of type, F--type, K--photo of type, N--isotype, N--photos of type & of isotype, S--photo of type, Y--isotype, Z--photos of type & of isotype).

7a. AEGIPHILA MORTONI Moldenke, sp. nov.

Frutex; ramulis dense breviterque pubescentibus; foliis chartaceis oblongis vel ellipticis acutis integris, ad basin obtusis vel acutis, supra breviter pubescentibus, subtus densissime tomentosius barbellatisque non glanduliferis; inflorescentiis axillaribus cymosis capitatis dense multifloris dense albo-tomentosis perspicue bracteolatis.

Shrub to 7 m. tall; branchlets medium-slender, gray-brown in color, obtusely tetragonal, densely short-pubescent throughout, slightly flattened at the nodes; nodes not annulate; principal internodes 3--5.5 cm. long; leaves decussate-opposite; petioles slender or medium-stoutish, 1.5--1.8 cm. long, densely tomentose with whitish hairs, flattened (but not margined) above, convex beneath; blades chartaceous, very dark green above (brunnescent in drying), much lighter beneath, oblong or elliptic, 9.5--13 cm. long, 3.3--4.4 cm. wide, acute at apex, entire, obtuse or acute at base, not at all prolonged into the petiole, short-pubescent above (much more densely so or tomentellous along the midrib), very densely tomentose-pubescent beneath and densely barbellate along the midrib and secondaries, not glanduliferous; midrib slender and densely tomentellous-pubescent above with whitish hairs, rounded-prominent beneath; secondaries slender, 8--12 per side, ascending, only very slightly arcuate, flattened above, prominent beneath, rather obscurely arcuate-joined at the margins beneath; vein and veinlet reticulation indiscernible above, hidden in the tomentum or somewhat conspicuous beneath and flat or subprominent; inflorescence axillary, cymose; cymes solitary, opposite, capitate, 1--2

cm. long and wide, densely white-tomentose throughout, densely many-flowered, shorter than the subtending petioles, conspicuously bracteolate; bractlets and prophylla linear, elongate, 8--10 mm. long, very densely short-pubescent with fulvous hairs, usually 3 clustered at the very base of the calyx; calyx obconic, 6--7 mm. long, 3.5--5 mm. wide, very densely short-pubescent with fulvous hairs, 5-ribbed, its rim 5-toothed, the teeth broadly triangular, about 1 mm. long and 2 mm. wide at base, acute; corolla-tube (in bud) broadly cylindric, about 4 mm. long, glabrous; corolla-limb 5-parted, its lobes (in bud) regular, obovate, 2--3 mm. long, about 2 mm. wide, rounded or subcucullate at apex, glabrous; stamens (in bud) 5, inserted about half way up the corolla-tube, included; filaments flattened, about 1.5 mm. long, glabrous; anthers oblong, elongate, about 2.5 mm. long, 1 mm. wide, dorsifixed near the base; pistil (in bud) included; style capillary, 2--3 mm. long, glabrous; stigma bifid, its branches erect, about 2 mm. long; ovary subglobose, about 1.5 mm. long and 1 mm. wide, umbilicate at apex, glabrous; fruit in large clusters, green (according to Cook & Gilbert).

The type of this most distinct species was collected by Orator Fuller Cook and Grover Bruce Gilbert (No. 1234) at Píñasniocj, Panticalla Pass, altitude 3600 m., Cuzco, Peru, June 18, 1915, and is deposited in the United States National Herbarium. The collectors describe the species as a "shrub 15--20 ft. high, with large clusters of green berries". It is named in honor of my esteemed friend and colleague, Dr. Conrad Vernon Morton, assistant at the United States National Herbarium and a recognized authority on the Solanaceae and Acanthaceae.

PERU: Cuzco: Cook & Gilbert 1234 (N--fragment of type, W--type).

11. AEGIPHILA MULTIFLORA Ruíz & Pav.

An additional synonym is Clerodendron bolivianum Britton ex Rusby, Bull. Torrey Club 27: 82 (1900). This binomial is often inaccurately accredited to Rusby. The type of Clerodendron bolivianum was collected by Henry Hurd Rusby (No. 2619) at Unduavi, El Beni, Bolivia, and is deposited in the herbarium of Columbia University. It is identical with the type collection of the Ruíz & Pavon species. Although this species superficially greatly resembles a Clerodendrum, its floral characters show that it actually is an Aegiphila. Steinbach reports that the flowers are red or rose in color, that it is a bush 2--3 m. tall, and that it ascends to an altitude of 3300 m. The second type locality name is spelled "Pillao" on the type sheet in the British Museum. It was misspelled "Pellao" by me on page 475 of my original

monograph.

Additional citations: PERU: Huanuco?: Ruiz & Pavon s.n. [Huassachuass & Pallao] (A--photo of isotype, B--photo of isotype, Bm--type & 2 isotypes, Cb--isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--photo of isotype, N--fragment of isotype, N--2 photos of isotypes, P--isotype, S--photo of isotype, W--photo of isotype, X--photo of isotype, Z--3 photos of isotypes), s.n. (Bm); Puno: Weddell 4626 (N--photo, Z--photo); Department undetermined: Dombey 251 (Le), s.n. [Páson Huara-huari] (P); Ruiz 187 (B). BOLIVIA: El Beni: Buchtien 2992 (G, Le, N, W--2), s.n. [XI. 1910] (B); Julio 454 (W); H. H. Rusby 2619 (G, D, G, W); Cochabamba: Steinbach 5809 (B, N--photo, Z--photo).

125. AEGIPHILA NERVOSA Urb.

An additional synonym is Aegiphila reticulata L. C. Rich., in herb. [not A. reticulata Moldenke, 1933]. The following notes made by Dr. A. C. Smith concerning the specimens of this species in Urban's herbarium in February, 1932, are of interest: "The Haïti specimens are certainly conspecific. Concerning their identity with the fragment from Jamaica I am less certain. The young leaf of the fragment is similar to those of the Haïti specimens. The remaining calyx of the fragment is a trifle less pilose than that of the others; however, I conclude that all the above specimens are one species."

Additional citations: JAMAICA: Collector undesignated s. n. ["Bois de Calme"] (Cb); Swartz s.n. (A--photo of type, B--fragment of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of fragment of type). HISPANIOLA: Haïti: W. Buch 1239 (B), 1949 (B, N--photo, Z--photo); Christ 1946 (B), 1992 (B), 2229 (B); Ekman H.472 (A--photo, B, B--photo, D--photo, F--photo, G--photo, K--photo, N--photo, P--photo, W--photo, Z--photo), H.1518 (B, N--photo, Z--2 photos), H.8971 (B, N--photo, Z--photo); Herb. Lamarck 261 (P); Picarda 171 (B), 1418 (B--2); L. C. Richard s.n. [S.-D.] (P).

51. AEGIPHILA NOVOFRIBURGENSIS Moldenke.

Additional citations: BRAZIL: Rio de Janeiro: Clausen 134 (Cb--isotype, N--fragment of isotype).

49. AEGIPHILA NOVOGRANATENSIS Moldenke.

This species has occasionally been confused with Cordia sp. and herbarium specimens have been distributed under that name. The Lehmann 8524 cited by me on page 349 of my monograph is actually the type collection of A. aculeifera

and should therefore be deleted.

Additional citations: COLOMBIA: Antioquia: Lehmann 4066 (A--photo of type, B--2 isotypes, B--photo of type, Bm--isotype, D--photo of type, F--isotype, F--photo of type, G--photo of type, K--isotype, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, X--isotype, Z--photos of type & of isotype).

119. AEGIPHILA OBDUCTA Vell.

This is said to be a rather large tree at times, with creamy-white and very fragrant flowers. The very young leaves are often very densely villose-lanuginous above as well as beneath, this villosity gradually wearing off as the leaves mature.

Additional citations: BRAZIL: Amazonas: Ule s.n. (B); Minas Geraes: Bunbury 297 (K); Clausen 8 (Cb, P), 652 (Us), s.n. [Aug.--April, 1840] (Bm, K); Damazio 1786 (X--2); Riedel 452 (L--3); Saint-Hilaire C. 1774 (P--3); Schwacke 9556 (Cb--3); Sellow 1256 (N--photo, Z--photo), 5930 (B--7, Z--2 photos), s.n. (B, Z--photo); Rio de Janeiro: Bowie & Cunningham s.n. (Bm, N--photo, Z--photo); Brade 10,542 [Herb. Rio de Janeiro 22,947] (B); Burchell 2018 (G, K); Casaretto 926 (Cb); G. Gardner 5125 (A--photo, B--photo, Bm, D--photo, F--photo, G--photo, K, N--photo, W--photo, Z--photo), 5830 (Bm, K, N--photo, Z--photo); Glaziou 1498 (Br--3, Cp, K, P), 3068 (Br--2, Cp, P), 4160 (Cp--2, P, Z--2 photos), 4161 (Cp, P), 6652 (Cp, K, N--photo, P, Z--2 photos), 11,338 (Cp, K, P, Z--photo), 11,339 (Cb, Cp, K, P, Z--photo), 18,394 (B, Bm, Cp, K, P, Z--photo), 19,722 (Cp, K, P, Z--photo); Guillemin 975 (Cb, Dc, P--2); Houllet s.n. (Br); Miers s.n. [Organ Mount.] (Bm); Riedel 0,33 (L--2); Schott 4950 (V--2, Z--photo); Wawra 342 (V); São Paulo: Bowie & Cunningham s.n. [Road to Sta. Amaro, near Sta. Paulo] (Bm); Burchell 4015 (K); Gaudichaud 265 (P); Puiggari 3200 (P), 3225 (P); Schwacke 1939 (Cb); Paraná: Dusen 379a (E--2, Z--photo), 8143 (A--photo, B, B--photo, Cb, D--photo, E, F--photo, G, G--photo, K, N--photo, S, W, W--photo, Z--photo); Jönason 379a (B, Ca, Cb, D, N--photo, S, W, Z--photo); Santa Catharina: Bunbury 463 (K); Fox 463 (Bm); Schwacke 13,098 (Cb); Ule 785 (Z--photo); State undetermined: Collector undesignated 23 (Z--photo); Sellow s.n. (B). CULTIVATED: Brazil: São Paulo: Handro s.n. [Herb. Inst. Biol. S. Paulo 33,523] (N); F. C. Hoehne s.n. [Herb. Inst. Biol. S. Paulo 33,523] (K), pl. viv. 442 [Herb. Inst. Biol. S. Paulo 33,523] (K, N, Sp). ILLUSTRATION: Line-drawing (N).

77. AEGIPHILA OBOVATA Andr.

Synonyms are Aegiphila dubia Moldenke in Fedde, Repert. 33: 120 (1933) and Aegiphila sylvatica Greg, in herb. [not

A. sylvatica Moldenke, 1933]. At the time when my monograph was sent to the printer, I had not yet been able to secure the loan of the type collection of Andrews' A. obovata, and so, on page 391 of my monograph, I placed Andrews' name in synonymy under A. dubia with a question. From Andrews' illustration and description I had surmised that his species and mine were the same, but hesitated to resurrect his name without having seen the actual type specimen. Since this time Andrews' type has been examined by myself and found to be definitely conspecific with the A. dubia of pages 391--394 of my monograph. Andrews' name, being by far the older, must therefore be used for this species. The name A. sylvatica Greg is supposed to have been published in Sloane's Hist. Jamaica, but as yet I have not succeeded in locating the reference. The species is said to inhabit rocky vales and roadsides. It is described as a shrub or small tree, with greenish-white or -yellow corollas. The common name of "timber fiddlewood" has been recorded.

Additional citations: TOBAGO: W. E. Broadway 2973 [Herb. Monac. 4305] (B, E, Le, Mu), 9064 (E, K--2); Greg s.n. (Bm); Seitz 61 (B), 92 (B); R. O. Williams s.n. [Trin. Bot. Gard. Herb. 11,115] (N--photo, Z--photo). TRINIDAD: W. E. Broadway 2584 (B), 3157 (B, Le), 6349 (Bm, E, K), 6396 (Bm, E), 6406 (Bm, E, K, N--photo, Z--photo), 9128 (Bm); Finlay s.n. [Trin. Bot. Gard. Herb. 2386] (Z--2 photos), s.n. [Trin. Bot. Gard. Herb. 2389] (A--photo, B--photo, D--photo, F--photo, G--photo, N--3 photos, P--photo, S--photo, W--photo, Z--2 photos); Trin. Bot. Gard. Herb. 2388 (Z--photo), 5668 (N--photo, Z--photo); R. O. Williams s.n. [Trin. Bot. Gard. Herb. 12,026] (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, P--photo, S--photo, W--photo, Z--2 photos), s.n. [Trin. Bot. Gard. Herb. 12,163] (K, Z--photo), s.n. [Trin. Bot. Gard. Herb. 12,180] (K, N--photo, Z--photo). CULTIVATED: British Guiana: British Guiana Bot. Gard. s.n. [May, 1905] (K, U); England: Hort. Boyton s.n. [A. B. Lambert, 1807; Lord Seaforth, West Indies] (B--photo of isotype, Cb--3 isotypes, K--photo of isotype, N--fragment of isotype, N--photo of isotype, S--photo of isotype, Z--photo of isotype). ILLUSTRATION: Copy of Andr. Bot. Rep. 9: pl. 578. 1809 (Ba).

58. AEGIPHILA OBTUSA Urb.

Additional citations: JAMAICA: N. L. Britton 3224 (B, N--photo, Z--photo); W. Harris 8996 (A--isotype, A--photo of isotype, B--type, B--photo of isotype, Bm--isotype, D--photo of isotype, G--photo of isotype, K--isotype, N--2 photos of isotypes, P--photo of isotype, S--photo of isotype, W--photo of isotype, Z--2 photos of isotypes).

52. AEGIPHILA ODONTOPHYLLA Donn. Sm.

Additional synonyms are Aegiphila furia Ørst., in herb., and Aegiphila fusca Ørst., in herb. The Stork 2230 cited by me on pages 352 and 476 of my monograph is actually A. aculeifera. The character of the teeth on the margins of the leaf-blades serves to distinguish the two species at once.

Additional citations: COSTA RICA: Guanacaste: Ørsted 11,174 [Macbride photos 22,775] (Cp, F--photo, N--photo, Z--photo); Heredia: H. Pittier 288 (A--photo of type, B--photo of type, Br, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

110. AEGIPHILA OVA'IA Moldenke.

Additional citations: PERU: Junín: Killip & Smith 26,520 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type). BOLIVIA: La Paz: Ule 9718, in part (B).

69. AEGIPHILA PANAMENSIS Moldenke.

An additional synonym is Aegiphila nigrescens Ørst., in herb. Paul records the vernacular name "hombre grande" from Panama, and describes the plant as a shrub 2--3 m. tall, blooming in November and December at an altitude of 1050--1075 m. Skutch collected it in a forest at an altitude of 850 m., blooming in July, and describes it as arborescent, to 6 m. tall, with yellowish flowers. It has been thought by some herbarium workers to belong in the Rubiaceae, and herbarium specimens have been thus distributed!

Additional citations: COSTA RICA: Alajuela: Brenes 3574 [110] (F), 4320 [105] (F), 4345b [105a] (F), 4395 [180] (F), 14,313 (F); San José: Skutch 2680 (N); Cartago: Ørsted 11,175 (Cp), 11,178 (Cp). PANAMA: Bocas del Toro: Cooper & Slater 117 (N--photo, Z--2 photos); Dunlap 407 (Z--photo), 438 (Z--photo); Stork 20 (Mi); Canal Zone: Killip 12,171 (N--photo, Z--photo); Piper 5616 (N--photo, Z--photo); Colon: H. Pittier 4149 (G, Z--photo); Panamá: Heriberto 163 (Z--photo); Faul 153 (W); H. Pittier 6815 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, W--photo of type, Z--photo of type); P. C. Standley 28,155 (Z--photo); Province undetermined: Duchassaing s.n. [Panama] (P--5).

74. AEGIPHILA PANICULATA Moldenke.

Additional citations: NICARAGUA: Segovia?: Englesing 100 (N--photo, W, Z--photo). PANAMA: Canal Zone: P. C. Standley 29,232 (Z--photo), 30,246 (N--photo, Z--photo); Panamá: P.

C. Standley 28,871 (N--photo, Z--photo). COLOMBIA: Santander Sur: Killip & Smith 14,729 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

34. AEGIPHILA PARAGUARIENSIS Briq.

The Burchell 8345 cited by me on pages 339 and 472 of my monograph as A. integrifolia has proved on further study to be A. paraguariensis.

Additional citations: BRAZIL: Minas Geraes: Lindley 222/222b (Br); Martius s.n. [Herb. Monac. 1031] (Mu); Stephan s.n. [1843] (Br); Warming s.n. [Lagoa Santa] (Bm, Cp--2, Z--photo); Goyaz: Burchell 8345 (G, K); G. Gardner 3401 (Br, K); Matto Grosso: Malme 2473a (B, Cb, G, Us); Rio de Janeiro: Glaziou 11,334 (Cp, K, P, Z--photo); São Paulo: Löfgren 245 (B); Mendonça 727 (B); Paraná: Dusén 10,472 (B, Ca, E, G, N--photo, W, Z--photo), 15,963 (B, Cb, D, E, K, N--photo, W, Z--2 photos); Löfgren 95 (Z--photo), 99 (Z--photo); State undetermined: Collector undesignated 404 (B); Herb. Martius 379 (Br); Sellow s.n. (B). PARAGUAY: Fiebrig 5631 (B); Hassler 1921 (Z--photo of cotype), 4498 (B--photo of cotype, Bm--cotype, Cb--cotype, D--photo of cotype, F--cotype, F--photo of cotype, G--photo of cotype, K--photo of cotype, N--fragment of cotype, N--3 photos of cotypes, P--cotype, V--photo of cotype, W--photo of cotype, X--cotype, Z--4 photos of cotypes), 5056 (Bm--cotype, Cb--2 cotypes, F--fragment of cotype, N--3 photos of cotypes, P--cotype, X--cotype, Z--3 photos of cotypes), 6766 (Bm--cotype), 6931 (Bm--cotype, Cb--cotype, K--cotype, N--fragment of cotype, N--photo of cotype, P--cotype, X--cotype, Z--2 photos of cotypes), 10,852 (B).

36. AEGIPHILA PARVIFLORA Moldenke.

Additional citations: VENEZUELA: Bolívar: Grosourdy Cat. 13 s.n. (Z--photo). BRAZIL: Pará: Spruce 342 [Herb. Monac. 1033] (Mu), 589 (A--photos of type & of isotype, B--photos of type & of isotype, Bm--isotype, Cb--isotype, D--photos of type & of isotype, F--photos of type & of isotype, G--photos of type & of isotype, N--photos of type & of 3 isotypes, W--photos of type & of isotype, Z--photos of type & of 3 isotypes).

25. AEGIPHILA PAUCIFLORA Standl.

Dr. J. S. Karling of Columbia University states that the word "guamil" which occurs on page 314 of my monograph is a misspelling of "huamil".

Additional citations: BRITISH HONDURAS: D. Stevenson 5

(A--photo of type, B--photo of type, D--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

122. AEGIPHILA PAVONIANA Moldenke.

The Conserv. Bot. Geneva specimen cited below is labelled "Mexique -- Pavon", but Urban claims that specimens thus labelled were probably collected by Sessé and Mocifio in Mexico and sent to Pavon by them. The species was described by myself from a specimen labelled "Peruvia -- Herb. Pavon" and was said by me to have been collected somewhere in Peru by Ruiz and Pavon (vid., Brittonia 1: 190, 460, and 461). This assertion was made on the basis of the specimen in the Herbarier Boissier, which was the only known specimen at the time of that writing and which is the type specimen of the species. The label on the Conservatoire Botanique specimen is obviously older and contains longhand inscriptions. It would seem, therefore, to be the more authentic. The label of the Herbarier Boissier specimen seems to be one of a uniform form label printed in Geneva for Pavon's herbarium when this was received, on the assumption (apparently erroneous) that all the specimens in this herbarium came from Peru. The specimen in the herbarium of the British Museum (which also claims to possess Pavon's original herbarium!) has a label which bears the inscription, apparently in Pavon's own handwriting, "Huayaquil". It would seem to me that this last-mentioned specimen is probably the most authentic of all and that the species is actually a native of Ecuador, the type having been collected at Guayaquil.

Additional citations: ECUADOR: Guayas: Herb. Pavon s.n. [Huayaquil] (Bm), s.n. ["Peruvia"] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type); Pavon s.n. ["Mexique"] (Cb, N--fragment, N--photo).

72. AEGIPHILA PENDULA Moldenke.

The Heinrichs specimens cited below were collected in fruit in July, the leaf-blades are densely puberulent with erect hairs on both surfaces, the fruit is described as yellow, and the collector describes the plant as a rare shrub about 2 m. tall.

Additional citations: PANAMA: Canal Zone: P. C. Standley 25,719 (Z--photo). VENEZUELA: Zulia: H. Pittier 10,645 (A--photo of type, B--photo of type, Cb--2 isotypes, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photos of type & of isotype, Z--photos of type &

of isotype); Tejera 157 (N--photo, Z--photo), 168 (Z--photo).
ECUADOR: Oriente: Heinrichs 499 (Cb--2, N, N--fragment, N--photo, Z--photo).

48. AEGIPHILA PENNELLII Moldenke.

Additional citations: COLOMBIA: Tolima: Pennell 3185 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

35a. AEGIPHILA PERNAMBUCENSIS Moldenke, sp. nov.

Frutex vel arbuscula; ramulis plusminus puberulis; samentis dense breviterque pubescentibus; petiolis brevibus densissime breviterque pubescentibus; laminis chartaceis oblongo-ellipticis vel obovatis abrupte acutis vel subacuminatis integris, ad basin subcuneatis vel acuminatis, supra minute puberulis vel glabratiss et nitidis, subtus dense furfuraceo-tomentosis; inflorescentiis axillaribus; cymis dense multifloris obscure brachiatis; calyce campanulato dense tomentello, margine 4-apiculato.

Shrub or small tree; branchlets tetragonal, gray, medullose, lightly or densely puberulent, marked with large and prominent corky leaf-scars; twigs slender, tetragonal, often decussately flattened and ampliate at the nodes, very densely short-pubescent with dark brown hairs; principal internodes 1.4--5 cm. long; leaves decussate-opposite; petioles rather slender, 2--12 mm. long, very densely short-pubescent like the twigs, flattened above; blades chartaceous, oblong-elliptic or obovate, dark green above (brunnescent in drying), much lighter beneath, 5--16 cm. long, 2.5--5 cm. wide, abruptly acute or subacuminate at apex, entire (or on watersprouts and young shoots often coarsely and irregularly crenate-dentate with sharp teeth), subcuneate or acuminate at base, minutely puberulent above, becoming glabrate and nitid, densely furfuraceous-tomentose with rather short cinereous hairs beneath; midrib comparatively slender, flattened and usually puberulent above, very prominent beneath; secondaries slender, 6--9 per side, arcuate-ascending, flat or very slightly impressed above, prominulent beneath, the terminations mostly hidden in the tomentum beneath; inflorescence axillary; cymes solitary, opposite, 2--2.5 cm. long, 1.2--2.2 cm. wide, densely many-flowered, rather obscurely brachiate; peduncles slender, 6--10 mm. long, densely short-pubescent with brown or cinereous hairs; pedicels slender, 0.5--2 mm. long, pubescent with cinereous hairs; bractlets and prophylla linear, 2--3 mm. long, cinereous-short-pubescent; calyx campanulate, about 3.8 mm. long and 3.1 mm. wide at apex, densely tomentellous with hairs about 0.2 mm. long,

obscurely 4-ribbed at apex, its rim 4-apiculate, the apiculations about 0.2 mm. long; corolla hypocrateriform, actinomorphic, glabrous, its tube narrow-cylindric, about 3.1 mm. long and 0.7 mm. wide, straight, its limb 4-parted, its lobes oblong-lingulate, about 4.2 mm. long and 2.1 mm. wide, acute or blunt at apex; stamens 4, greatly exserted, inserted about 0.2 mm. below the mouth of the corolla-tube; filaments filiform, about 5.2 mm. long, glabrous; anthers oblong, about 1 mm. long and 0.5 mm. wide, 2-celled, dorsifixed just above the base; pistil included; style capillary, about 3.6 mm. long, glabrous; stigma bifid, its branches about 1.5 mm. long, slightly divergent; ovary subglobose, about 0.7 mm. long and 0.6 mm. wide, glabrous, 4-lobed, 4-celled, terminated by a flattened glandular 4-lobed disk; fruiting-calyx and fruit not seen.

The type of this species was collected by Don Bento Pickel (No. 3042) in a thicket at Tapéira, Pernambuco, Brazil, July 14, 1932, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species was included with A. crenata by myself in my monograph and in the first installment of these supplementary notes (Brittonia 1: 327. 1934; Phytologia 1: 196. 1937) and the Pickel collections from Pernambuco were all erroneously cited as A. crenata. A. crenata is a more southern species, confined to Minas Geraes, São Paulo, and Paraná. One sheet of the type collection in the Britton Herbarium is composed of the tips of water-sprouts with conspicuously obovate leaf-blades, which are cuneate at the base and with their margins coarsely and very irregularly crenate-dentate. The collector states that these twigs were taken from an offshoot of a young plant.

BRAZIL: Pernambuco: Pickel 526 [Herb. Inst. Biol. S. Paulo 20,089] (B, N), 3030 (N), 3042 (Ba--isotype, I--isotype, N--type, N--4 isotypes, W--isotype); Ramage s.n. [21 Jan. 1888] (Bm); Rio de Janeiro: Burchell 9 (K); Swainson s.n. (G, K).

75. AEGIPHILA PERPLEXA Moldenke.

Additional citations: TOBAGO: W. E. Broadway 4243 (B, Cp); Eggers 5540 (B, Le, N--photo, P, Vu, Z--2 photos). TRINIDAD: D. W. Alexander s.n. [Trin. Bot. Gard. Herb. 5022] (B); Fendler 571 (Z--photo), 592 (Bm, Ed--2, N--photo, Z--photo). VENEZUELA: Delta Amacuro: Rusby & Squires 316 [Herb. Monac. 1843] (B--photo of type, Bm--isotype, Cb--isotype, D--photo of type, E--isotype, Ed--isotype, G--photo of type, K--isotype, Mi--isotype, Mu--isotype, N--photos of type & of 2 isotypes, P--photo of type, S--isotype, S--photo of type, Vu--isotype, W--photo of type, X--isotype, Z--photos of type & of 2 isotypes).

64. AEGIPHILA PERUVIANA Turcz.

Klug describes the species as a shrub about 1 m. tall, growing in forests, with cream-colored corollas, blooming in January. It seems very probable that further study will bring to light a sufficient number of differences between the Peruvian and Bolivian specimens cited for this species, to justify their separation (as Dr. Rusby maintains) and to warrant the application of a new name to the Bolivian form, even if only of varietal rank.

Additional citations: PERU: San Martín: Klug 3511 (Cb, E, I, N); A. Mathews 1617 (N--photo, Z--photo), s.n. [Moyobamba] (Z--photo); Spruce 4275 [Macbride photos 24,619] (A--photo of isotype, B--photo of isotype, Bm--isotype, Br--isotype, Cb--2 isotypes, Cp--isotype, D--photo of isotype, Ed--isotype, F--fragment & photo of isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--3 photos of isotypes, P--isotype, P--photo of isotype, S--photo of isotype, W--photo of isotype, Z--3 photos of isotypes); L. Williams 5383 (N--photo, Z--photo), 5479 (Z--photo), 5480 (Z--photo), 5588 (Z--photo), 5697 (Z--photo), 6152 (Z--photo), 6291 (Z--photo), 6304 (Z--photo), 6836 (A--photo, B--photo, D--photo, N--2 photos, P--photo, S--photo, W--photo, Z--photo), 6860a (Z--photo), 7334 (Z--photo); Loreto: Ule 6476 (K). BOLIVIA: El Beni: H. H. Rusby 2473 (Bm, E, Ed, K, Pr, W, Z--4 photos).

100. AEGIPHILA PLATYPHYLLA Briq.

Additional citations: PARAGUAY: Hassler 8056 (B--photo of isotype, Bm--isotype, Cb--isotype, D--photo of isotype, F--isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--fragment of isotype, N--3 photos of isotypes, P--isotype, S--photo of isotype, W--photo of isotype, X--isotype, Z--photos of type & of 3 isotypes).

60. AEGIPHILA FLICATA Urb.

Additional citations: JAMAICA: Bertero 2105 (B--type, Dc--isotype, Z--photos of type & of isotype), s.n. [Majo Jun. 1831] (B).

88. AEGIPHILA PUBERULENTA Moldenke.

Additional citations: COLOMBIA: Bolívar: Elias 617 (A--photo of type, B--photo of type, D--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype), 673 (N--photo, Z--photo).

105. AEGIPHILA PULCHERRIMA Moldenke.

Additional citations: PERU: Junín: Schunke 400 (N--photo, Z--photo), 443 (A--photo of type, B--photo of type, D--photo

of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype).

91. AEGIPHILA QUINDUENSIS (H.B.K.) Moldenke.

The "Pittier 8806" cited by me on pages 416 and 475 of my monograph should have been cited as "H. Pittier 8806". Some sheets of this collection are A. elata and have been designated as H. Pittier 8806a.

Additional citations: COLOMBIA: Cundinamarca: Mutis 782 (W); Tolima: Bonpland 5864 (P); Goudot s.n. [Quindiu] (N--photo, P, Z--photo); Humboldt & Bonpland s.n. [El Moral, Quindiu] (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type). VENEZUELA: Federal District: H. Pittier 10,404 (Ba, Cb--2, P, Z--photo); Carabobo: Karsten s.n. [Puerto Cabello] (A--photo, B--photo, D--photo, F--photo, G--photo, N--2 photos, P--photo, S--photo, W--photo, Z--2 photos); H. Pittier 8806 (Z--photo).

115. AEGIPHILA RACEMOSA Vell.

The Sagot 473 cited by me on pages 449 and 476 of my monograph should read "in part", since some sheets of this collection seem to be A. glandulifera var. pyramidata. The Aegiphila aequinoctialis Mart. cited on page 421 as a synonym of A. vitelliniflora is actually a synonym of A. racemosa. This has been determined through examination of the type specimen, Martius 2724, in the Munich herbarium. The "Schomburgk 281" cited on page 476 was cited in error and should be deleted. The "Dahlgren & Sella 542" cited on page 473 is a typographic error for Dahlgren & Sella 524. The species has been confused by some herbarium workers with A. foetida Sw., and some herbarium specimens have been distributed under that name! The two Goeldi collections cited below are very anomalous in their thinly membranous leaf-blades, but in all other respects match precisely typical specimens of A. racemosa. They may possibly represent a hybrid with A. vitelliniflora.

Additional citations: VENEZUELA: Zulia: Rutten-Pekelhar- ing 40 (Ut). BRITISH GUIANA: Aitken 1082 (K); Beckett 8447 (K, U); De la Cruz 946 (A--photo, B--photo, D--photo, F--photo, N--photo, W--photo, Z--photo), 3627 (A--photo, B--photo, D--photo, E, G--photo, N--photo, W--photo, Z--2 photos), 4292 (E), 4552 (E); Drake s.n. (N--2 photos, Z--photo); Jenman 1993 (N--photo, U, Z--2 photos), 6715 (K, U); M. R. Schomburgk 123 (Z--photo), 146 (B, Z--photo), 183 (Bm, Cb, K), 615 (Z--photo). SURINAM: Berthoud-Coulon 550 (Bm); Collector indig. Suriname 87 (Ut); Department of Forestry

2850 (Ut); Kappler 1717 (E, P, Ut, V, Z--photo). FRENCH GUIANA: Collector undesigned s.n. (P); Mélinon 174 (Z--photo), 424 (P, Z--photo); Sagot 473, in part (Cb--3, K, P--4, V, Z--2 photos), s.n. [Karovany, 1854--58] (P). BRAZIL: Amazonas: Martius 0,39 [Herb. Monac. 1012] (Mu), s.n. [R. Negro; Herb. Monac. 1011] (Mu); Pará: Burchell 9726 (K, N--photo, Z--photo); Dahlgren & Sella 524 (N--photo, Z--photo); Goeldi 6999 (Cb), 7002 (Cb); Killip & Smith 30,278 (Z--photo); Martius 2724 [Herb. Monac. 1008] (Mu); Snethlage 109 (B, F); Pernambuco: Pickel 3642 (W); Bahia: Martius s.n. [Herb. Monac. 1000 & 1009] (Mu--2); State undetermined: Blanchet s.n. (Bm--2). LOCALITY OF COLLECTION UNDESIGNATED: Herb. A. L. Jussieu 5039 (P). ILLUSTRATION: Line-drawing (N).

89. AEGIPHILA RETICULATA Moldenke.

Additional citations: COLOMBIA: Cundinamarca: Mutis 985 [857] (F--photo of type, G--photo of type, K--photo of type, N--photo of type, S--photo of type, Z--photo of type).

24. AEGIPHILA RIEDELIANA Schau.

Schwacke says that the branches of this species are pendent, the corolla yellow, the fruit green, and that it blooms in November, a vernacular name being "cajuja".

Additional citations: BRAZIL: Bahia: Pohl 4392 (A--photo of cotype, B--photo of cotype, D--photo of cotype, F--photo of cotype, G--photo of cotype, N--photo of cotype, S--photo of cotype, W--photo of cotype, Z--photo of cotype); Minas Geraes: Mosén 2005 (S); Rio de Janeiro: Burchell 1985 (K); Miers 4590 (N--photo, Z--photo); São Paulo: Miers s.n. [Araras, Jan. 7, 1838] (Bm); Santa Catharina: Schwacke 12,966 (Cb, N--fragment); Ule 1537 (A--photo, B--photo, D--photo, F--photo, G--photo, N--photo, S--photo, W--photo, Z--photo), 1863 (N--photo, Z--photo); Rio Grande do Sul: Malme 898 (S--2), 951 (S); Tweedie s.n. [Porto Alegre] (N--photo, Z--photo).

14a. AEGIPHILA RIMBACHII Moldenke, sp. nov.

Frutex vel arbor; ramulis plusminus furfuraceo-puberulis glabrescentibus; petiolis crassis furfuraceis submarginatis; laminis coriaceis nitidis oblongo-ellipticis vel ellipticis vel subobovatis subacutis vel obtusis integris subrevolutis, ad basin acutis vel cuneatis, utrinque glabris (praeter costa puberula vel cinereo-pulverulenta), subtus punctulatis; inflorescentiis axillaribus glomeratis multifloris; calyce campanulato brevissime tomentello, margine truncato integro.

Shrub or tree; branchlets more or less acutely or obtusely tetragonal, stramineous or brownish, sparsely lenticellate, more or less furfuraceous-puberulent, becoming subglabrate; principal internodes apparently variable and irregu-

lar, 0.7--6 cm. long, often a long one followed immediately by a very short one and then a very long one again, so that the leaves may appear to be whorled; leaves decussate-opposite, often approximate; petioles stout, 1.3--2 cm. long, flat above, rounded beneath, furfuraceous, slightly margined; blades coriaceous, bright green above, much darker and blackening beneath only in drying, nitid on both surfaces, oblong-elliptic, elliptic, or tending toward being slightly obovate, 10--14 cm. long, 3.5--5.5 cm. wide, bluntly acute or rounded at apex, entire and slightly revolute along the margins, acute or cuneate at base, glabrous above or slightly puberulent along the midrib, glabrous beneath except for the cinereous-pulverulent or puberulent midrib, somewhat punctate beneath; midrib stout, more or less impressed or else prominent in a groove above, very prominent beneath; secondaries slender, 6 or 7 per side, arcuate-ascending and strongly joined almost at the margins beneath, often subimpressed above, very sharply prominent beneath; vein and veinlet reticulation very sparse and obscure on both surfaces or a few veins sharply prominent near the margins beneath and connecting the secondaries; inflorescence axillary, glomerate, the fascicles many-flowered and dense; calyx campanulate, about 5.4 mm. long and 5.7 mm. wide at apex, very short-tomentellous, its rim truncate and entire; corolla hypocrateriform, actinomorphic, glabrous outside, its tube broadly infundibular, about 5.4 mm. long, ampliate to 5.5 mm. at apex, its limb 4-parted, regular, its lobes ovate-lingulate, about 3.1 mm. long and wide, rounded at apex; stamens 4, included, inserted about 1.7 mm. below the mouth of the corolla-tube; filaments filiform, about 1.3 mm. long, glabrous; anthers oblong, about 3.1 mm. long and 1 mm. wide, 2-celled, dorsifixed just above the base, the thecae parallel; pistil included; style heavy, about 3.1 mm. long, glabrous; stigma bifid, its branches about 1.6 mm. long, divergent; ovary subglobose, about 1 mm. long and wide, glabrous, 4-lobed, 4-sulcate, 4-celled, 4-ovulate; fruiting-calyx and fruit not seen.

The type of this most distinctive species was collected by August Rimbach (No. 234) on the outer slope of the Western Cordillera above Balsapampa, at an altitude of 2600 m., Los Ríos, Ecuador, in October, 1934, and is deposited in the herbarium of the Field Museum of Natural History at Chicago. It is named in honor of its distinguished collector, who has made such noteworthy collections in a little-known region of Ecuador. He describes the species as follows: "Middle-sized forest tree. Leaves opposite, thickly stiff, glabrous, shining. Flowers in axillary glomerations. Flower 13 mm. long. K. gamopetalous with brownish pubescence. C. with greenish tube and 4 reddish lobes. A. 4, fixed in the corolla-tube.

P. superior, with globular ovary and thin style. Fruit not seen. Wood yellowish. Cortex 5 mm. thick. Bark gray, rough, with round warts."

ECUADOR: Los Ríos: Rimbach 234 [Mus. Yale School of Forestry 28,648] (N--isotype, N--fragment of type, N--photo of isotype, W--isotype, Y--isotype, Z--photo of isotype).

118. AEGIPHILA RORAIMENSIS Moldenke.

Additional citations: BRITISH GUIANA: Appun 1204 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

44a. AEGIPHILA SALTICOLA Moldenke in Fedde, Repert. 37: 211-212. 1934.

Spreading shrub, to 3 m. tall; branchlets stoutish, tetragonal, somewhat flattened and ampliate at the nodes, very densely and shortly appressed-pubescent; principal internodes 4--5.5 cm. long; leaves decussate-opposite; petioles stout, 1--3.5 cm. long, densely appressed-pubescent with extremely short blackish hairs; blades membranous, oblong-elliptic, 12--19 cm. long, 5--7 cm. wide, acuminate at apex, entire, long-cuneate at base, roughened with abundant minute elevated punctae above, densely pubescent or subvillose beneath; midrib very stout, prominent beneath; secondaries slender, 9--12 on each side, ascending, not very arcuate, prominent and distinctly arcuate-joined near the margins beneath; vein and veinlet reticulation slender, mostly hidden beneath and obscure above; inflorescence supra-axillary; cymes solitary, opposite, about 4 cm. long and 3 cm. wide, very densely many-flowered, often subcapitate in fruit; peduncles slender, about 2 cm. long, densely short-appressed-pubescent; branches of the cymes and the pedicels slender, densely subvillose, the fruiting-pedicels to 6 mm. long; flowers not seen; fruiting-calyx cupuliform, 3--5 mm. long, 6--9 mm. wide, densely subvillose with whitish hairs, its margin shallowly 4-lobed with broadly triangular lobes; fruit drupaceous, oblong, about 7 mm. long and 6 mm. wide, yellow when mature, smooth, hard, not at all fleshy, 4-seeded.

The type of this neglected species was collected by Ynes Mexia (No. 5922) along the edge of cut-over woods in the Japanese colony at Thomé Assú, district of Acará, altitude about 30 m., Pará, Brazil, July 16, 1931, and is deposited in the herbarium of the Field Museum of Natural History at Chicago. It is very closely related to A. integrifolia, from which its pubescence, however, at once distinguishes it.

BRAZIL: Pará: Mexia 5922 (B--photo of type, F--type, K--

photo of type, N--fragment of type, N--photo of type, S--photo of type, Z--photo of type).

63a. *AEGIPHILA SCANDENS* Moldenke in Fedde, Repert. 37: 212. 1934.

Scandent shrub; branches rather slender, obtusely tetragonal, buff, rather densely furfuraceous-puberulent; principal internodes elongate, 4.5--7.5 cm. long; leaves decussate-opposite; petioles stoutish, 7--10 mm. long, densely puberulent; blades firmly membranous or subcoriaceous, dark green and nitid, slightly lighter beneath, ovate or ovate-elliptic, 14--19 cm. long, 5--8.5 cm. wide, acute at apex, entire, rounded at base, glabrous on both surfaces (except for the more or less puberulent midrib beneath), densely impressed-punctate beneath; midrib rather slender, sharply prominent in a channel above, very prominent beneath; secondaries slender, 8--10 per side, arcuate-ascending; inflorescence axillary and terminal; axillary cymes very few, apparently in the uppermost axils only, to 5 cm. long and 4.5 cm. wide, many-flowered, bracteolate; panicle terminal, about 10.5 cm. long and 6.5 cm. wide, composed of about 9 cymes, its sym-podia short and densely yellowish-puberulent; peduncles rather slender, 1.5--3 cm. long, yellowish-puberulent; bractlets various, oblong, obovate, lanceolate, or elliptic, 3--13 mm. long, 1--3 mm. wide, rather long-stipitate, sparsely puberulent; pedicels very slender, 1--3 mm. long, densely yellowish-puberulent; calyx campanulate, about 3.1 mm. long and 3.6 mm. wide at apex, minutely puberulent, its margin subtruncate, slightly scarious and repand; corolla hypocrateriform, yellow, its tube cylindric, about 9.5 mm. long, ampliate above, its lobes 4, lanceolate-oblong, 4--6.5 mm. long and 1--1.8 mm. wide, subacute at apex; stamens 4, inserted about 4.9 mm. below the mouth of the corolla-tube, exserted; filaments filiform, about 9 mm. long, glabrate; anthers and pistil not seen; ovary obovate, tetragonal, about 1 mm. long and wide, glabrous, 4-celled; fruiting-calyx and fruit not seen.

The type of this handsome species was collected by Ernst Heinrich Georg Ule (No. 9721) at Seringal Auristella on the Rio Acre, Acre Territory, Brazil, in March, 1911, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The label on the type specimen bears the written annotation "Peru", but according to that indefatigable collector, Mr. B. A. Krukoff, who has done perhaps more than any one person since the days of the pioneer explorers and collectors in Brazil to advance our knowledge of the flora of that country, the Seringal Auristella is definitely in Acre Territory, Brazil.

BRAZIL: Acre Territory: Ule 9721 (B--isotype, K--type,

N--fragment of type, N--photo of type, Z--photo of type).

108a. AEGIPHILA SCHIMPFII Moldenke, sp. nov.

Frutex; ramulis dense puberulis; petiolis dense puberulis; laminis chartaceis fragilibus ellipticis longe acuminatis integris, ad basin acutis, supra sparsiuscule puberulis, subtus dense puberulis; inflorescentiis axillaribus terminalibusque; cymis axillaribus subpaucis, ad apicem ramulorum congestis; paniculis terminalibus thyrsoides ubique dense puberulis.

Shrub, to 5 m. tall; branchlets slender, obtusely tetragonal, brownish, densely puberulent, rather sparsely lenticellate; nodes not annulate; principal internodes 3--7 cm. long; leaf-scars large and prominent, borne on elongate stout and divergent sterigmata; leaves decussate-opposite; petioles slender, 7--8 mm. long, densely puberulent with brownish hairs like the branchlets, slightly flattened above, convex beneath, not noticeably ampliate at base; blades chartaceous, dark green above, lighter beneath, very fragile and undate in drying, elliptic, 8--18 cm. long, 3.5--6.5 cm. wide, long-acuminate at apex, entire, acute at base, rather sparsely puberulent above, densely so beneath, the puberulence brownish like that on the branchlets and petioles; midrib slender, slightly prominulent above, rounded-prominent beneath; secondaries slender, 8--15 per side, irregular, flat above, prominulent beneath, arcuate-ascending, not conspicuously anastomosing; vein and veinlet reticulation very slender, obscure above, flat or the larger portions subprominulent beneath; inflorescence axillary and terminal; axillary cymes rather few, crowded toward the apex of the branchlets and building up an elongate pyramidal thyrses with the terminal panicle, the individual cymes 2--5.8 cm. long and 1--3 cm. wide, densely many-flowered; terminal panicle 8--13 cm. long, 4--4.5 cm. wide at base, composed of 3 or 4 pairs of cymes and a terminal one; peduncles of cymes 1--3.5 cm. long, of panicles 4--5 cm. long, densely puberulent throughout; sympodia densely brown-puberulent like the peduncles; bractlets and prophylla filiform, 1--3 mm. long, short-pubescent-pilose; calyx campanulate, 2.9--3 mm. long, about 2.5 mm. wide at apex, slightly contracted just above the ovary, pulverulent and slightly puberulent, its rim 4-toothed, the teeth triangular, about 1 mm. long and wide at base, rounded, short-apiculate with a callose point at apex; corolla infundibular, its tube narrow-cylindric, about 3.5 mm. long, glabrous outside, tomentulose in the throat within, its limb 4-parted, its lobes elliptic, about 2.7 mm. long and 1 mm. wide, obtuse at apex; stamens 4, inserted at apex of the corolla-tube; filaments obsolete; anthers subsessile, elliptic, a-

bout 0.5 mm. long and 0.3 mm. wide, dorsifixed near the base; pistil long-exserted; style capillary, about 4.5 mm. long, glabrous; stigma bifid, its branches greatly elongate, 5--5.5 mm. long, twisted; ovary minute, tetragonal, black, about 0.5 mm. long and wide, glabrous, 4-sulcate, 4-lobed at apex, 4-celled; fruiting-calyx incrassate, about 4 mm. long and 6 mm. wide, obscurely pulverulent-puberulent or glabrate, its rim subentire or shallowly erose; fruit not seen.

The type of this recently discovered species was collected by H. J. F. Schimpff (No. 1003) -- in whose honor it is named -- in a forest near Biscay, Ecuador, at an altitude of 300 m., April 18, 1934, and is deposited in the herbarium of the Botanisches Museum at Berlin.

ECUADOR: Province undetermined: Schimpff 1003 (B--type & isotype, N--fragment of type).

39. AEGIPHILA SELLOWIANA Cham.

An additional synonym is Aegiphila Orbignyana Mart., in herb. The accepted specific name for the species is also sometimes misspelled "Selloviana" or "Schowiana". On page 475 of my monograph I cited a "Riedel & Luschnath 1813" for this species -- this is a typographic error for Riedel & Luschnath 1812. The "Severén 188" cited on page 476 is an error and should be deleted. On page 334 I cited "Sellow s. n. [flowers]" as the type collection; this should be cited as a cotype collection, since the species was based by Chamisso on two separate collections. Schwacke states that the flowers are odorous. Miss Mexia describes the species as a common shrub, with long straggling branches, growing to be a tree, with slightly fragrant flowers and greenish-white corollas. Saint-Hilaire reports the vernacular name "habiara", while "cajúgá" has also been reported from Brazil.

Additional citations: BRAZIL: Bahia: Blanchet 28 (Bm); Riedel 222 (L--2); Goyaz: Pohl & Schott 936/4915 (V--2); Mattogrosso: Malme 2473 (S, W); Minas Geraes: Ackermann s.n. [1831] (Br--2); Clausen 361 (B), 632 (Cp, P--3, Us), s.n. [Minas Geraes; Herb. De Candolle 869 & 876] (Cb--4, Dc--2, K), s.n. [Aug.--April, 1840] (Br--2, K); Damazio 1926 (X--5); Frambach 123 (F, N, S); Gaudichaud s.n. [1830] (Dc); Henschen s.n. [Herb. Regnell I.184, 1868] (B, Us, W, Z--3 photos); Mexia 5396 (B, Bm, Cb, E, G, I, P, S); Regnell I. 184 [1845] (Cp), I.184 [1866; Herb. Monac. 1658] (Br, Mu, Ol--3, S--2, Us, W), I.184 [1877] (Us); Saint-Hilaire 2229 (P), 2229 ter (P--2), s.n. [Itabura] (P--3); Schwacke 11,264 (Cb); Warming s.n. [Lagoa Santa] (Bm, Cp); Espírito Santo: Campos Novaes 932 (Vu); Luetzelburg 12,345 (Mu); Rio de Janeiro: Burchell 2042 (K), 2492 (B--photo, D--photo, G--photo, S--photo, W--photo, Z--photo); Glaziou 808 (Br--2, Cp--2, K, Z--photo), 5956 (Cp, P--2), 14,164 (Bm, Br, Cb--2, Cp, K--2,

P--2); Langsdorff s.n. [Mandiocca; Riedel] (L--2); Martius 448 [Herb. Monac. 1042] (Mu); Miers 4592 (P), s.n. [Organ Mount., 1828] (Bm), s.n. [Imbuby, Organ Mt., Dec. 1837] (Bm); Peckolt 223 (Z--photo), 422 (Br); Pohl s.n. [Herb. Imp. Vien. 150] (B, K); Riedel 0,34 (L--2), s.n. [Rio de Janeiro] (Us); Schüch s.n. (V); Sellow s.n. [flowers] (K--2 cotypes, N--2 photos of cotypes, P--cotype), s.n. [fruit] (A--photo of cotype, B--2 cotypes, B--photo of cotype, Bm--cotype, D--photo of cotype, F--photo of cotype, G--photo of cotype, K--cotype, W--photo of cotype, Z--4 photos of cotypes); Warming s.n. (Cp); São Paulo: Brade 7464 (B); Burchell 3418, in part (K), 4604 (K); Collector undesignated 3653 (Vu); F. C. Hoehne s.n. [Herb. Inst. Biol. S. Paulo 8179] (A, W); Kosciński 225 [Herb. Inst. Biol. S. Paulo 31,636] (K, Sp); Löfgren s.n. [Herv. Geogr. e Geol. 373] (Cp), s.n. [Herv. Geogr. e Geol. 407] (Cp); Mosén 1534 (Z--photo), 3035 (S, Us, Z--photo), 4323 (A--photo, B--photo, D--photo, F--photo, G--photo, N--photo, P, W--photo, Z--photo); Riedel & Lusch-nath 1812 (L--2); Widgren 1177 (Us), II.1176 (Us), II.1176 1/2 (Us); Paraná: Dusén 474a (E), 2532 (G), 11,228 (Z--photo), 15,855 (B, Cb, E, K, W), 16,162 (Cb, D), 16,669 (B, N--photo, Z--2 photos), 17,362 (B, E, S, W, Z--photo); Rio Grande do Sul: Malme 799 (B, N--photo, Us, Z--photo); State undetermined: Blanchet s.n. (Bm); Herb. Martius s.n. [Herb. Monac. 1450] (Mu); Herb. Zuccarini s.n. [Herb. Monac. 1043] (Mu). BOLIVIA: La Paz: M. Bang 1332 [Herb. Monac. 1725] (Bm, Cb--2, E, Ed, K, Mi, Mu, N--photo, S, Vu, Z--photo); Santa Cruz: D'Orbigny 1094 (P--2). CULTIVATED: Brazil: São Paulo: F. C. Hoehne, pl. viv. 192 [Herb. Inst. Biol. S. Paulo 28,666] (N--2).

16. AEGIPHILA SESSILIFLORA Moldenke.

Additional citations: COLOMBIA: Antioquia: Archer 392 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

104. AEGIPHILA SETIFORMIS Rusby.

The "Bang 878a" cited by me as the type collection of this species on pages 434, 435, and 472 of my monograph, should more accurately be cited as "M. Bang 878a, in part", since some sheets of this number are A. spicata.

Additional citations: BOLIVIA: La Paz: M. Bang 878a, in part (A--photo of type, B--photo of type, Bm--isotype, D--photo of type, E--isotype, Ed--isotype, G--photo of type, K--isotype, N--photos of type & of 2 isotypes, P--photo of type, S--photo of type, W--isotype, W--photo of type, Z--photos of type & of 2 isotypes), 1732 [Herb. Monac. 1727]

(B, B--photo, C, Cb, D--photo, E, F, Mi, Mu, N--3 photos, P--photo, S--photo, V, Vu, W, W--photo, Z--3 photos).

94. AEGIPHILA SMITHII Moldenke.

Additional citations: PERU: San Martín: Klug 3894 (S); Loreto: Killip & Smith 26,957 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--isotype, G--photo of type, K--isotype, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype); Klug 1460 (A--photo, B--photo, D--photo, K--photo, N--photo, P--photo, S--photo, W--photo, Z--2 photos), 1490 (Z--photo); Melin s.n. [Iquitos] (S); Mexia 6499 (N); Tessmann 3591 (Cb, Hb), 3603 (Hb); L. Williams 3689 (S).

14. AEGIPHILA SORDIDA Moldenke.

Additional citations: PERU: Loreto: L. Williams 5054 (A--photo of type, B--photo of type, D--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

103. AEGIPHILA SPICATA (Rusby) Moldenke.

Additional citations: BOLIVIA: La Paz: M. Bang 878a, in part (A--photo, B--photo, D--photo, F--photo, G--photo, K--photo, P--photo, W--photo, Z--photo).

46. AEGIPHILA SPLENDENS Schau.

Additional citations: BRAZIL: Minas Geraes: Pohl 1022 [Herb. Imp. Vien. 149] (A--photo of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--fragment of isotype, N--photos of type & of 4 isotypes, P--isotype, S--photo of isotype, W--photo of isotype, Z--photos of type & of 4 isotypes).

92. AEGIPHILA SPRUCEANA Moldenke.

The Spruce 3017 cited by me on page 417 of my monograph as a cotype collection of this species, should not have been called a cotype. The species is based solely on Spruce 2296.

Additional citations: BRAZIL: Amazonas: Koch-Grünberg 93 (B); Spruce 2296 (A--photo of type, B--isotype, B--photo of type, Bm--isotype, Br--isotype, Cb--isotype, Cp--isotype, D--photo of type, Ed--isotype, F--isotype, F--photo of type, G--photo of type, K--isotype, N--isotype, N--photos of type & of isotype, W--photos of type & of isotype, Z--photos of type & of isotype), 3017 (K, N--3 photos, S, Z--3 photos).

26. AEGIPHILA STANDLEYI Moldenke.

Additional citations: COSTA RICA: San José: P. C. Standley 37,570 (A--photo of type, B--photo of type, D--photo of

type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

[53]. AEGIPHILA STRICTA Rusby.

The species described by me on pages 352 and 353 under the name of A. stricta must take on the older name of A. laeta H.B.K., which see in these supplementary notes for details [Phytologia 1: 228--229. 1937].

123. AEGIPHILA SUFFLAVA Moldenke.

Additional citations: PERU: Loreto: Killip & Smith 27,439 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photos of type & of isotype, P--photo of type, S--photo of type, W--photo of type, Z--photos of type & of isotype); Klug 2076 (B, E, G, K, Mi, W); Tessmann 5155 (Z--photo); L. Williams 8225 (Z--photo).

84. AEGIPHILA SURFACEANA Moldenke.

Additional citations: BRAZIL: Amazonas: Rob. Schomburgk 981 (Bm, Cb--3, F, K, Le, N--3 photos, P, Z--4 photos); Spruce 2297 (K--2, N--photo, Z--photo); Tate 162 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, N--2 photos of type, P--photo of type, S--photo of type, W--photo of type, Z--2 photos of type); Pará: Dahlgren & Sella 173 (A--photo, B--photo, D--photo, G--photo, N--photo, P--photo, S--photo, W--photo, Z--photo); Huber 2022 (F--photo, Z--photo), 3296 (F--photo, Z--photo).

55. AEGIPHILA SWARTZIANA Urb.

The fruiting-calyx is shallowly cupuliform, black in drying, about 3 mm. long and 7 mm. in diameter, glabrous, somewhat striate, its margin subtruncate or slightly and irregularly erose and subscarious. The fruit is oblong, 4--5 mm. long and wide, glabrous, not nitid, blackening in drying.

Additional citations: JAMAICA: W. Harris 11,716 (A--photo, B--photo, Bm, D--photo, E, K, N--4 photos, P, W--photo, Z--4 photos); Swartz s.n. [Jamaica] (A--photo of type, B--fragment of type, B--photo of type, Bm--isotype, D--photo of type, F--photo of type, G--photo of type, N--photo of type, W--photo of type, Z--photo of type); Wolle s.n. (G).

50. AEGIPHILA SYLVATICA Moldenke.

Additional citations: COLOMBIA: Santander Sur: Killip & Smith 14,849 (B--photo of isotype, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--photo of isotype, N--2 photos of isotypes, P--photo of isotype, S--photo of

isotype, W--photo of isotype, Z--photos of type & of 3 isotypes).

1. *AEGIPHILA TERNIFOLIA* (H.B.K.) Moldenke.

The specimen of Goudot s.n. in the Kew herbarium, cited below, is anomalous in having its leaves merely opposite instead of ternate as is usual in this species. The name "Amerina ternifolia (H.B.K.) DC." listed as a synonym on page 280 of my monograph, should more accurately be written "Amerina ternifolia (H.B.K.) P. DC."

Additional citations: COLOMBIA: Cundinamarca: Goudot s.n. [Near Bogotá] (A--photo, B--photo, D--photo, F--photo, G--photo, K, N--photo, P--photo, S--photo, W--photo, Z--photo); Department undetermined: Lehmann B.T.690 (Le, N, N--photo, Z--photo). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Baillon s.n. (P).

56. *AEGIPHILA TRIFIDA* Sw.

This binomial is occasionally written "Aegiphila 3-fida". The species has been confused with Ixora fasciculata and Chomelia sp., and herbarium specimens have been distributed under those names!

Additional citations: JAMAICA: N. L. Britton 4053 (K, Z--photo); W. Harris 5892 (B, Bm), 6144 (B, Bm, Z--photo), 6273 (B, B--photo, Bm, D--photo, G--photo, N--3 photos, Os, P--photo, W--photo, Z--4 photos), 9372 (B, K); March 902 (B); McFadyen s.n. (B, K--2, N--photo, Z--photo); Orcutt 5622 (Ca); Purdie s.n. [Port Royal Mtns., Aug. 1843] (K); Swartz s.n. [Jamaica] (A--photos of type & of isotype, B--photos of type & of isotype, Bm--isotype, Cp--isotype, D--photos of type & of isotype, Dc--isotype, F--photos of type & of isotype, G--photos of type & of isotype, N--photos of type & of isotype, P--photo of type, S--isotype, W--photos of type & of isotype, Z--photos of type & of isotype).

9a. *AEGIPHILA TRIFLORA* Moldenke in Fedde, Repert. 37: 212--213. 1934.

Tree, 5--6 m. tall; branches rather stout, obtusely tetragonal or subterete, glabrous, covered with gray flakey bark; branchlets slender, short, gray or buff in color, glabrous, often ridged lengthwise; principal internodes very variable, 1--10 cm. long; leaves decussate-opposite or approximate; petioles 11--21 mm. long, glabrous, deeply canaliculate above, greatly incrassate and more or less expanded at base; blades rather firmly membranous, gray-green above, bright green beneath, oblong-oblongate, 9.5--19 cm. long, 3.4--6 cm. wide, short-acuminate at apex, entire, cuneate at base, glabrous and nitid on both surfaces; midrib slender, prominent in a channel above, prominent beneath; secondary

ies slender, 7--9 on each side, prominent in a channel above, prominent beneath, usually very obscurely or not at all arcuate-joined at the margins; inflorescence axillary, 3-flowered, about 5.6 cm. long and 2.5 cm. wide; peduncles slender, 2--4 cm. long, ampliate at apex, glabrous; pedicels cuneate-ampliate, 11--19 mm. long, glabrous, widened into the calyx above; bractlets 2, filiform, about 3 mm. long, glabrous, borne at the base of the pedicels; calyx campanulate, about 6 mm. long and 3.6 mm. wide, glabrous, attenuate at base into the flattened pedicel, its margin 4-dentate, its teeth ovate-triangular, about 0.5 mm. long and 1.3 mm. wide at base; corolla hypocrateriform, its tube cylindric, about 3.9 mm. long, glabrous, its lobes 5, oblong-obovate, about 4.6 mm. long and 2.6 mm. wide, rounded or subacute at apex; stamens 4, inserted about 1.5 mm. below the mouth of the corolla-tube, included; filaments about 0.6 mm. long, flattened; anthers sagittate, about 1 mm. long and 0.5 mm. wide at base; pistil exserted, glabrous; style rather stout, about 5.7 mm. long; stigma bifid, its branches about 0.6 mm. long, divaricate; ovary tetragonal, glabrous, about 1 mm. long and wide, 4-lobed, 4-celled; fruiting-calyx and fruit not seen.

The type of this remarkable species was collected by Ellsworth Paine Killip and Albert Charles Smith (No. 28,858) in a dense forest at Santa Rosa, on the lower Río Huallaga below Yurimaguas, at an altitude of about 135 m., Loreto, Peru, between September 1 and 5, 1929, and is deposited in the Britton Herbarium at the New York Botanical Garden. The fruit is described by the collectors as "pink". It seems to be related to A. cuneata from the same region. The latter differs conspicuously, however, in its short-petioled or sessile leaves, setose petioles, chartaceous and more or less asymmetrical leaf-blades which are setose on their venation, its many-flowered inflorescences, and its densely hirsute peduncles and pedicels.

PERU: Loreto: Killip & Smith 28,858 (N--type, W--isotype).

7. AEGIPHILA TRUNCATA Moldenke.

Additional citations: COLOMBIA: Cundinamarca: Mutis 3659 (F--photo, G--photo, K--photo, N--photo, Z--photo), 5191 (Cb--isotype, F--photo of type, G--photo of type, K--photo of type, N--photo of type, Z--photo of type).

59. AEGIPHILA UNIFLORA Urb.

Additional citations: JAMAICA: W. Harris 5533 (A--photo of isotype, B--type & 2 isotypes, B--photo of isotype, D--photo of isotype, G--photo of isotype, K--photo of isotype, N--2 photos of isotypes, P--photo of isotype, S--photo of

isotype, W--photo of isotype, Z--2 photos of isotypes).

8. AEGIPHILA VALERII Standl.

Additional citations: COSTA RICA: Guanacaste: Standley & Valerio 45,236 (A--photo, B--photo, D--photo, F--photo, G--photo, K, K--photo, N--photo, P--photo, S--photo, W--photo, Z--photo), 46,079 (N--photo, Z--photo); J. Valerio 148 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type). ILLUSTRATION: Line-drawing (N).

107. AEGIPHILA VELUTINOSA Moldenke.

The "Cook & Gilbert 1362" cited by me on page 472 of my monograph is a typographic error for Cook & Gilbert 1382.

Additional citations: PERU: Cuzco: Cook & Gilbert 1382 (A--photo of type, B--photo of type, D--photo of type, F--photo of type, G--photo of type, K--photo of type, N--photo of type, P--photo of type, S--photo of type, W--photo of type, Z--photo of type).

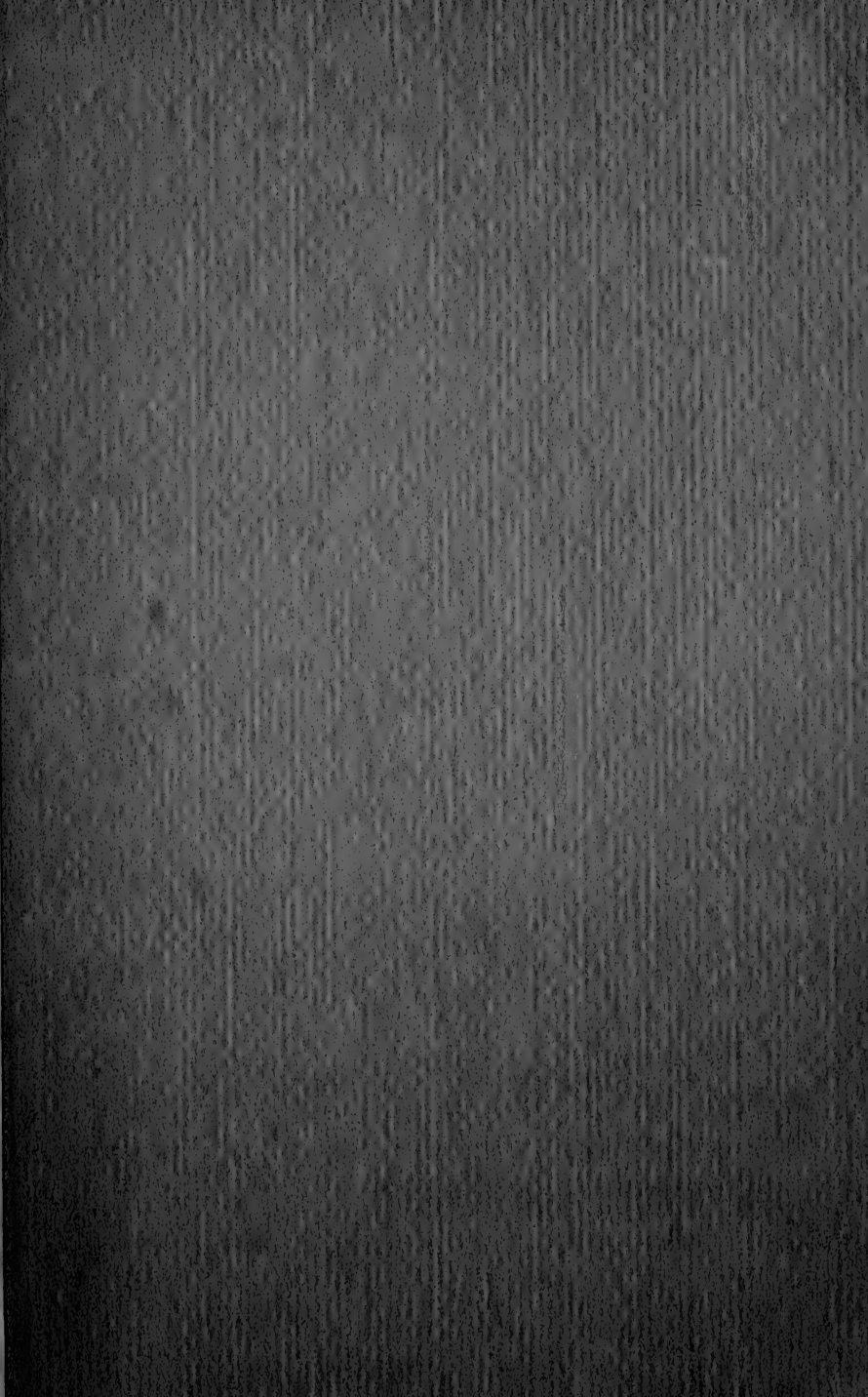
5. AEGIPHILA VERRUCOSA Schau.

Additional citations: VENEZUELA: Aragua: Allart 426 (N--photo, Ve, Z--2 photos); Fendler 841 (Cb, G, K); Jahn 444 (Ve, Z--photo); Karsten s.n. [Colonia Tovar, 1848] (B--6, Bm--2, K, L--3, N, N--2 photos, P, V--2, Z--4 photos), s.n. [1847] (B); Moritz 897 (A--photo of isotype, B--photo of isotype, Bm--isotype, Cb--2 isotypes, D--photo of isotype, F--photo of isotype, G--photo of isotype, K--isotype, N--fragment of isotype, N--photos of type & of 3 isotypes, S--photo of isotype, W--photo of isotype, Z--photos of type & of 3 isotypes), s.n. (Bm); H. Pittier 9347 (Ba, Z--photo).

37. AEGIPHILA VERTICILLATA Vell.

An additional synonym is Aegiphila lanata Casar., in herb. [not A. lanata Moldenke, 1933]. The "Dusén 7982" cited by me on page 473 of my monograph is a typographic error for Dusén 7980.

Additional citations: BRAZIL: Mattogrosso: A. Robert 434 (B, Bm), 434b (Z--photo); Minas Geraes: Casaretto 2624 (Cb); Clausen 15 (Cb), s.n. [Aug.--April, 1840] (Bm, K--2, Z--photo); Glaziou 13,056 (Br, Cb, Cp, P--3, Z--photo), 20,428 (B, Br, Cp, K, P, X); F. C. Hoehne, Com. Rondon 6109 (Sp); Lindberg 496 (Br); Mosén 1533 (N--photo, P, S, Us, Z--photo), 4322 (N--photo, S, Z--2 photos); Regnell 1.310 [1845] (Ut), 1.310 [1856] (S), 1.310 [1862] (K, Z--photo), 1.310 [1866; Herb. Monac. 1657] (A--photo, B--photo, Br, Cp--2, D--photo, F--photo, G--photo, Mu, N--photo, Ol--2, P--3, Vu, W--photo, Z--photo), II.310 [1856] (Us), II.310 [1874] (Us).



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

May, 1938

No. 8

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance.

Vol. I, number 7, was issued September 21, 1937

STUDIES OF NEW AND NOTEWORTHY TROPICAL AMERICAN PLANTS-- III

Harold N. Moldenke

AVICENNIA TONDUZII Moldenke, sp. nov.

Arbor; ramulis sarmentisque gracilibus articulatis dense brevissimeque adpresso-tomentellis, pilis cinereis vel sordidis; petiolis gracilibus 0.8--2 cm. longis dense brevissimeque adpresso-tomentellis; laminis coriaceis elongato-oblongis, 9--17 cm. longis, 1.7--2.8 cm. latis, ad apicem obtusis, integris, ad basin longe attenuatis vel acuminatis et in petiolum prolongatis, supra dense minuteque pulverulentis et impresso-punctulatis glabrescentibus, subtus dense brevissimeque adpresso-tomentellis, pilis cinereis vel sordidis; inflorescentiis paniculatis axillaribus terminalibusque 3--6 cm. longis et latis multifloris brachiatis.

Tree; branchlets and twigs slender, jointed, densely matted-tomentellous with gray or cinereous-sordid hairs, swollen and annulate at the nodes; leaves decussate-opposite; petioles slender, 0.8--2 cm. long, densely matted-tomentellous like the twigs, wrinkled-striate in drying; blades coriaceous, elongate-oblong, 9--17 cm. long, 1.7--2.8 cm. wide, obtuse or blunt at apex, entire, long-attenuate or acuminate at base and prolonged into the petiole, densely and very minutely pulverulent and impressed-punctate above, becoming glabrescent in age, densely matted-tomentellous beneath with cinereous or sordid hairs like the twigs; inflorescence cymose, paniculate, axillary and terminal, 3--6 cm. long and wide, usually regularly several-branched from the very base, the branches many-flowered; peduncles, axis, and branches of the inflorescence densely matted-tomentellous and wrinkled-striate in drying like the petioles; bractlets ovate, a pair subtending each pair of inflorescence-branches; flowers sessile; prophylla 3, ovate, about 2 mm. long and 1.5 mm. wide, strigose at the center on the back, villous-tomentose toward the margins, rounded or obtuse at apex, simulating sepals and closely appressed to them, imbricate; sepals 5, separate, imbricate, broadly elliptic or subrotund, about 2.5 mm. long and wide, rounded at apex and base, densely villous-tomentose on the back; corolla hypocrateriform, its tube broadly cylindric, short, straight, about 1 mm. long, glabrous on both surfaces, its limb 4-parted, the lobes equal, wide-spreading in anthesis, narrowly elliptic-lingulate, about 3 mm. long and 1.5 mm. wide, rounded at apex, densely tomentose on both surfaces; stamens 4, inserted about 0.5 mm. above the base of the corolla-tube, equal, exserted; filaments slender, about 1.5 mm. long, glabrous; anthers oblong,

about 0.75 mm. long and 0.375 mm. wide, 2-celled, not appendaged, opening by longitudinal slits; pistil 1, compound, 2-carpellary; ovary ovate-subglobose, about 1.25 mm. long and wide, densely appressed-villous with antrorse hairs, not lobed, incompletely 4-celled; style terminal, comparatively stout, about 0.75 mm. long, densely appressed-villous; stigma bifid, its branches about 0.25 mm. long, unequal; ovules borne on a basal 4-winged placenta, pendent.

The type of this species was collected by Adolfe Tonduz (No. 6776) in the littoral zone bordering the Pacific Ocean at Punta Mala, Costa Rica, in March, 1892, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. A complete discussion of this species, citation of specimens, and comments on its relationships will be found in my forthcoming monograph of the genus.

AMBRINA AMBROSIODES var. ANTHELMINTICUM (L.) Moldenke, comb. nov. Chenopodium anthelminticum L. Sp. Pl., ed. 1, 220. 1753.

BALSAMITA MAJOR var. TANACETOIDES (Boiss.) Moldenke, comb. nov. Pyrethrum Balsamita tanacetoides Boiss. Fl. Orient. 3: 346. 1875.

CISSAMPELOS FASCIOLATA Benth.

Additional specimens representing this species are Tessmann 3183 from Middle Ucayali, Peru, and 5067 from Iquitos, Loreto, Peru, and Krukoff 7274, collected on campinarana on the plateau between Rio Livramento and Rio Ipixuna, Municipality Humayta, in the basin of the Rio Madeira, Amazonas, Brazil, between November 7 and 18, 1934.

DISCIPHANIA KILLIPII Diels.

This species has been hitherto known only from the type collection, Killip & Smith 27,041, collected at Iquitos, Loreto, Peru, in August, 1929. Recent work on this and related groups of Menispermaceae by Mr. B. A. Krukoff and myself has brought to light another collection, Krukoff 8249, collected on high land, terra firma, near Palmares, Municipality of São Paulo de Olivença, Amazonas, Brazil, between September 11 and October 26, 1936, described as a vine. This constitutes a notable range extension for the species.

HYPERBAENA DOMINGENSIS (P. DC.) Benth.

According to Diels in Engler, Pflanzenreich 49[†]: 200-201 (1910), this is a very widely distributed species, ranging from Cuba to southernmost Brazil. The type was collected by Poiteau in Haiti. It seems rather doubtful to me whether all of the material commonly regarded as representing this

species, or even all of the material cited by Diels, is actually conspecific. If it is, then the species is certainly extremely polymorphic in its floral characters. Blanchet 2346 and Spruce 3167 (both cited by Diels) have been carefully dissected. In spite of the much more filiform-elongate inflorescences of the latter (which doubtless caused Miers to propose for it the name H. graciliflora Miers, of which it is the type collection), the staminate flowers are practically identical. The sepals are conspicuously dark-spotted toward the center and base, translucent at the margins, the outer ones lanceolate, about 0.75 mm. long and 0.5 mm. wide, sparsely villous toward the center and base on the back, the inner ones obovate, about 1 mm. long and 0.75 mm. wide, glabrous. The petals are obovate, not at all rhomboid, about 0.6 mm. long and 0.3 mm. wide, glabrous. The stamens are 0.5--0.75 mm. long, separate to the base, spreading, the anthers large and conspicuously projecting. Blanchet 1536, identified as this species by both Eichler and Diels, but not cited by Diels, has only pistillate flowers. These differ in having the sepals minutely punctulate, but not at all dark-spotted, membranous, slightly more incrassate toward the center and base, the outer ones ovate, 1.4--1.6 mm. long, about 1.2 mm. wide, blunt or subacute at apex, rounded-truncate at base, the inner ones obovate-elliptic, about 1.5 mm. long and 1.3 mm. wide, rounded at both apex and base, concave within, and the petals very tiny, obovate, about 0.25 mm. long and 0.125 mm. wide, rounded at apex, attenuate at base. H. H. Smith 1553, from Santa Marta, Colombia, identified as "Abuta prob. sp. nov. aff. Selloana" by A. C. Smith and as Hyperbaena domingensis by B. A. Krukoff, differs in having its sepals membranous, not dark-spotted, lighter at the margins, the outer ones lanceolate, about 1 mm. long and 0.5 mm. wide, obtuse at apex, truncate at base, sparsely strigose on the back and appearing ciliate along the margins, the inner ones broadly elliptic, about 2.25 mm. long and 1.25 mm. wide, rounded at apex, subacute at base, glabrous but minutely punctulate throughout; petals 6, membranous, obovate, not rhomboid, about 1.3 mm. long and 0.7 mm. wide, rounded at apex, gradually narrowed to the acute base, concave within, glabrous and minutely punctulate throughout; stamens 6, separate to the base, subequal, 1--1.25 mm. long, glabrous, incurved below the apex, slightly ampliate at apex; anthers small, but rather conspicuous, 2-celled, opening by longitudinal slits. Duss 3220, from Gadeloupe, cited by Diels, differs yet again in various details of floral characters from the South American specimens just described and has even smaller flowers. If all these collections actually represent the same species -- and in foliar characters they are indistinguishable -- then the

sheet of Poiteau s.n. from French Guiana, in the Kew herbarium, and Dusén 12,058 from Paraná, Brazil, and F. C. Hoehne pl. viv. 137 [Herb. Institut. Biol. S. Paulo 28,450], cultivated in the Jardim Botânico at São Paulo, Brazil, probably also belong here.

HYPERBAENA HASSLERI Diels.

Additional synonyms are Abuta parvifolia Rusby, in herb., and Hyperbaena ovalifolia (Mart.) Chod. & Hassler ex Malme, in herb. (sphalm.).

This species was known to Diels only from the type collection, Hassler 7299. Recent revisionary work in this group has brought to light two more Paraguayan collections, Hassler 12,223 and Malme 1038, and likewise H. H. Rusby 1400 from the pampas near Lake Rogagua, Bolivia, and Jørgensen 2061 from the Territorio de Chaco, Argentina. The Rusby collection (in fruit) was originally distributed as Abuta parvifolia and the Jørgensen collection (flowers and fruit) as Hyperbaena domingensis. Thus the range of this species is considerably extended and fruits are known for the first time. The fruits may be briefly described as follows: drupes oblong or slightly obovate, 1.3--1.6 mm. long, 6--7 mm. wide (when dry), the exocarp fleshy, black in drying, glabrous, nitid. It is worthy of note that the characters given by Diels in his key to the species of Hyperbaena (op. cit. p. 199) as distinguishing H. domingensis from H. Hassleri are just reversed. The line reading "Folia glabra" should lead to H. domingensis and the line reading "Folia subtus pilosa" should lead to H. Hassleri. It is also worthy of note that the inflorescences of H. Hassleri are not always 3.5--7 cm. in length and strongly resembling those of H. domingensis, as stated by Diels. In the specimens cited above the inflorescences range from 0.4 to 4 cm. in length and are not nearly as strong, complex, or elongate as those of H. domingensis, and yet very much larger and more conspicuous than those of H. oblongifolia.

HYPERBAENA OBLONGIFOLIA (Mart.) Chod. & Hassler.

An additional synonym is Abuta oblongifolia (Mart.) Miera, Ann. Mag. Nat. Hist. III, 14: 258. 1864.

This species was cited by Diels (op. cit. p. 202) only from Paraguay and Rio de Janeiro, Brazil. Recent revisionary work on the group has brought to light two more Paraguayan collections -- Fiebrig 5946 and 6403 -- and also a collection from Minas Geraes, Brazil -- Regnell III.1720. An emended description of the staminate flowers of this species, based on these new specimens, follows: sepals 6, membranous, slightly incrassate toward the center and base, not spotted, the outer 3 narrow-elliptic, 1.1--1.2 mm. long, 0.5--0.7 mm.

wide, acute or blunt at apex, blunt at base, rather sparsely villous-pubescent on the outside with long appressed yellowish hairs, the inner 3 broadly elliptic, 1.25--1.6 mm. long, 1--1.25 mm. wide, blunt or rounded at apex, subacute or rounded at base, very sparsely appressed-villous in the center (from base to apex) on the outside; petals 6, membranous, broadly elliptic or ovate-elliptic (or subobovate in outline when not spread out), 0.75--1.12 mm. long, 0.5--1 mm. wide, blunt or rounded at apex, acute at base, with two lobes below the middle, which are turned in and envelop the filaments, glabrous throughout; stamens 6, separate to the base, spreading, 0.75--0.875 mm. long, equal, glabrous; filaments slender, ampliate toward the apex or subgibbous, often curvate and humped at the apex; anthers large and prominent, swollen, 2-celled, plainly 2-lobed, opening by longitudinal slits.

HYPERBAENA SOLIMONESANA Moldenke, sp. nov.

Frutex scandens; ramis dense elongato-lenticellatis, minute puberulis vel glabratis; ramulis gracilibus striatis glabratis, lenticellis suberosis prominentibus, supra nodos saepe in panno elongato angustato velutino-tomentosis; petiolis gracilibus 1.1--7.1 cm. longis glabris, ad apicem curvatis incrassatisque; laminis firme chartaceis vel subcoriaceis ellipticis, 7--25 cm. longis, 3.4--10.4 cm. latis, ad apicem acuminatis, integris, ad basin obtusis vel acutis, utrinque glabris nitidisque.

Woody vine; branches medium-slender, densely lenticellate, minutely puberulent or glabrate, the lenticels elongate, abundant; branchlets and twigs slender, usually more or less longitudinally striate (when dry) and dark, with fewer, less elongate, corky-prominent lenticels, glabrous except for a patch of densely velutinous tomentum often borne in a narrow band between the petiole-base and the base of the next succeeding inflorescence; petioles slender, 1.1--7.1 cm. long, curved and thickened at the apex, glabrous; blades firmly chartaceous (a) or subcoriaceous, elliptic, 7--25 cm. long, 3.4--10.4 cm. wide, acuminate at apex, entire, obtuse or acute at base, glabrous and nitid on both surfaces, 5-ply-nerved, the 2 marginals and 2 laterals all issuing from the very base of the blade; midrib and laterals (not the marginals) flat or subimpressed above, very prominent beneath; vein and veinlet reticulation rather abundant, the ultimate portions mostly obscure above (except on very large basal leaves) and flat beneath, the larger portions prominent on both surfaces; inflorescence supra-axillary, solitary or 2--4 superposed, 2--8 cm. long, densely many-flowered; peduncle and rachis rather slender, but not filiform, glabrous except for velutinous-tomentose patches at the base of

each branch, the branches short and puberulent, several-flowered; pedicels obsolete or very short and puberulent; staminate flowers: sepals 6, imbricate, membranous, not spotted, the 3 outer ones narrow-elliptic, 1--1.5 mm. long, 0.37--0.5 mm. wide, subacute at apex, rounded-obtuse at base, rather densely and irregularly strigose throughout on the outer surface with appressed yellow hairs which project over the margins in ciliate fashion, the inner 3 broadly elliptic or elliptic-ovate, 1.7--1.9 mm. long, about 1.2 mm. wide, rounded at apex, abruptly acute at base, very densely tomentellous on both surfaces with short yellow hairs; petals 6, membranous, rhomboid-obovate, 0.6--0.7 mm. long and wide, sharply acute at apex, attenuate-acute at base, densely tomentellous on both surfaces from about the widest portion to the apex with spreading yellowish projecting hairs; stamens 6, separate to the base, about 0.75 mm. long, equal, free from the petals, hardly at all adherent at base, glabrous, ampliate at apex; anthers small, not conspicuously projecting nor swollen, 2-celled, opening by longitudinal slits, not prominently 2-lobed; drupes oblong-elliptic, 1.6--1.8 mm. long and 8--10 mm. wide (when dry), sessile, usually paired, glabrous, the exocarp fleshy, black in drying.

The type of this species was collected by Boris Alexander Krukoff (No. 8924) in a high forest on terra firma in the basin of the creek Belem, Municipality of São Paulo de Olivença, basin of Rio Solimões, Amazonas, Brazil, between October 26 and December 11, 1936, and is deposited in the Britton Herbarium at the New York Botanical Garden. The description of the fruit is taken from Krukoff 7279, collected on campinarana on the plateau between Rio Livramento and Rio Ipixuna, Municipality Humayta, basin of Rio Madeira, Amazonas, Brazil, between November 8 and 18, 1934, since this collection probably represents the same species. Gleason 827, described as a vine 20 feet long, collected in dense upland forest at Rockstone, British Guiana, between July 15 and August 1, 1921, probably represents an older basal branch of the same species, thus accounting for the much larger leaves. This collection was originally identified and distributed by H. A. Gleason as a species of *Piper* and later determined as "*Abuta concolor* P. & E. ?" by N. E. Brown.

H. solimoesana differs notably from all other known species of *Hyperbaena* in its flat or indistinct tertiary and veinlet reticulum and in the characters of its inflorescence. In its foliar and inflorescence characters, in fact, it closely resembles some species of *Abuta*, notably *A. Selloana* Eichl. It certainly differs pronouncedly from all other known species of *Hyperbaena* from central tropical South America. Its tomentose petals also seem to place it in a group apart from the rest of the genus.

LANTANA CORDOBENSIS Moldenke, nom. nov.

Tamonopsis spicata Griseb., Abh. K. Ges. Wiss. Götting. 19: 246. 1874 [not Lantana spicata Vell. Fl. Flum. 254. 1825].

LANTANA JUNELLIANA Moldenke, nom. nov.

Lippia lantanifolia var. crenata Griseb., Abh. K. Ges. Wiss. Götting. 19: 243. 1874.

LIPPIA GRISEBACHIANA Moldenke, nom. nov.

Lippia lantanifolia Griseb., Abh. K. Ges. Wiss. Götting. 19: 242. 1874 [not Lippia lantanifolia F. Müll. Fragm. 6: 151. 1868].

UNGULIPETALUM Moldenke, gen. nov.

Herbae scandentes. Radices elongatae tuberoso-incrassatae filipendulae (an parasitico-offensae?). Caules e basi erecta sursum volubiles tenues. Folia alterna longe petiolata, lamina membranacea vel termiter papyracea cordata vel aequilateriali-triangulari plinervia. Inflorescentiae cymosae, cymae parcae in paniculam compositae longe pedunculatae. Flores pedicellati dioeci. Flores ♂: sepala 9, 6 exteriora in seriebus duis disposita lanceolato-ovata extus subvillosa, 3 interiora multo majora lanceolato-ovata, parte basali non campanulato- vel tubuloso-conniventia, parte anteriore non reflexa. Petala 6 late elliptica bilobata, ad apicem retusa, ad basin valde unguiculata; lobis tumidis translucetibus, in parte ventrali confluentibus, in parte dorsali non confluentibus sed secus costam petali in carina dua parallela longitudinaliter elevatis, ad basin cordatis, glabris membranaceis. Stamina 6 usque ad mediam connata, parte libero filamentorum erecto incrassato glabro, ad apicem incurvato in connectivum non producto. Antherae subimmersae terminales biloculares, thecae oblongae, rimi longitudinali dehiscentes, in anthesin plerumque horizontaliter dispositae. Flores ♀: sepala 12, 9 exteriora conico-ovata imbricata extus subvillosa, 3 interiora multo majora ovata, parte basali non campanulato- vel tubuloso-conniventia, parte anteriore non reflexa. Petala 6 ovata vel hastato-sagittata incrassata, ad basin unguiculata glabra, lobis non tumidis. Staminodia nulla. Carpella 6-9. Ovarium gibboso-semiovatum dense villosum. Stylus teres subfiliformis elongatus, ad apicem uncinatus.

Scandent herbs; roots elongate, bearing several to many elongate thickened tubers, perhaps parasitic; stems erect at base, twining above, slender; leaves alternate, long-petiolate, the blades membranous or thin-papery, cordate or equilateral-triangular, pinnately-nerved; inflorescence cymose, axillary, the cymes few, disposed in long-pedunculate panicles;

flowers pedicellate, dioecious; male flowers: sepals 9, the 6 outer ones in two series of 3 each, lanceolate-ovate, subvillous outside, the 3 inner ones much larger, lanceolate-ovate, not campanulate- or tubular-connivent at the base, not reflexed at the apex; petals 6, broadly elliptic, bilobed, retuse at apex, conspicuously clawed at base, the lobes swollen, translucent, confluent on the ventral side, on the dorsal side the inner margins not confluent, but raised in the form of two parallel longitudinal keels along the midrib of the petal, cordate at base, glabrous, thin-membranous; stamens 6, firmly connate to about the middle, the free portion of the filaments erect, thick, glabrous, curved inwards at the apex, the connective not appendaged; anthers terminal, 2-celled, the thecae oblong, dehiscing by means of a longitudinal slit, usually borne horizontally during anthesis; female flowers: sepals 12, the 9 outer ones conic-ovate, imbricate, subvillous outside, the 3 inner ones much larger, ovate, not campanulate- or tubular-connivent at the base nor reflexed at the apex; petals 6, ovate or hastate-sagittate, incrassate, glabrous, clawed at the base, the two lobes not noticeably swollen or inflated or keeled; staminodes absent; carpels 6--9; ovary gibbous, half-ovate, asymmetric, densely villous; style terete, slender, elongate, hooked at the apex.

This genus, whose name is taken from two Latin words, ungula, a claw, and petalum, a petal, is thus far known only from a single species, a discussion of which follows below. It is probably a member either of the tribe Tinosporeae or the tribe Cocculeae of the family Menispermaceae. It seems to be most closely related to the genus Cocculus P. DC., from which it differs conspicuously in its tuberous filipendulous roots, its staminate flowers having 6 outer stamens in two series of 3 each, inflated clawed and bilobed petals, and 6 connate stamens, and its pistillate flowers having 12 sepals, elongate uncinat styles, and densely villous ovaries. It also bears resemblances to the genus Odontocarya Miers, from which the same characters and the lanceolate-ovate shape of its sepals distinguish it.

UNGULIPETALUM FILIPENDULUM (Mart.) Moldenke, comb. nov.

Cocculus Filipendula Mart., Flora 24: Beibl. 2: 43. 1841.
Odontocarya filipendula (Mart.) Miers, Contrib. Bot. 3: 65. 1871.
Ohondodendron filipendulum (Mart.) Diels in Engl. Pflanzenreich 4^{av}: 81. 1910.

The type of this species, which is the type species of the genus, was collected by Maximilian Alexander Philipp, Prinz zu Wied-Neuwied, in woods at Cabo Frio, on September 8 (or a few days previously), 1815. According to Eichler in Mart. Fl. Bras. 13¹: 184 (1864) it was also collected in

southeastern Brazil by Sellow (No. 596) and by Luschnath. Eichler separates a variety from the species, to which, however, he does not assign a formal name. He states that the true species, represented by the Wied-Neuwied and Sellow specimens and perhaps a "Mart. Herb. Fl. Bras. 283", has petioles only 1--2 inches long, leaf-blades 1--2 1/2 inches long and 1--2 inches wide, and sparse pubescence throughout. The variety, on the other hand, represented by the Luschnath collection, has petioles 3--4 inches long, leaf-blades 4--5 inches long and wide, and denser pubescence throughout. Apparently all four of these collections were sterile, since no mention is made of floral or fruit characters either by Martius, Eichler, or Miers, or by Walpers in his Repert. 2: 748 (1843), where the species is discussed. Diels saw only pistillate flowers, obtained from the São Paulo portion of Glaziou 13,520. He cites, however, an unnumbered Schwacke collection also from Cabo Frio.

Perhaps Eichler's variety can be maintained, although not having seen any of the collections which he cites, I cannot commit myself now. The four sheets of Glaziou's collections before me, however, exhibit leaves with the blades varying from 2.9 cm. long and 2.5 cm. wide to 9.4 cm. long and 5.6 cm. wide and petioles from 0.8 to 3.1 cm. in length.

The species is said to be called "abuta miuda" by the natives and to be used medicinally as an antidote. Although the specific name was originally spelled with a capital initial letter it certainly has no connection with the genus Filipendula Tourn. and therefore does not need to be capitalized. Miers was the first to write it with a small initial letter, both under Cocculus and under Odontocarya, in Contr. Bot. 3: 65 (1871).

The species is quite distinct in its vegetative and floral characters from all known members of the South American Menispermaceae. It has been carefully compared by B. A. Kruckhoff and myself during the course of our studies of the botanical ingredients of "curare" with the genera Sciadotenia Miers, Hyperbaena Miers, Somphoxylon Eichl., Abuta Barrère, Anomospermum Miers, Cissampelos L., Synandropus A. C. Smith, Chondodendron Ruiz & Pav., Cocculus P. DC., Odontocarya Miers, and the other new genus which will be proposed in our "curare" paper. The only genera of the list in which it could conceivably go are the last two and its floral and habitual differences from these two have been mentioned above. Martius, Walpers, Eichler, and Glaziou considered it to belong in the genus Cocculus, although Eichler placed it there with an interrogation-point, Miers thought it was an Odontocarya, and Diels regarded it as an anomalous Chondodendron. These three genera belong in three distinct tribes of the family, according to Diels' monograph in Engler, Pflanzen-

reich 4⁹⁴: 46--47 (1910), but it must be remembered that all of the earlier collections were apparently sterile and not even Diels saw flowers of both sexes. He says of it "*Quae stirps singularis a speciebus ceteris longius distat*".

Since an abundance of material of both staminate and pistillate flowers has been available to me, thanks to the kind courtesy of the curators of the Paris and Kew herbaria, I give herewith a detailed description of both types of flowers: staminate flowers: outer sepals 6, in two series of 3 each, lanceolate-ovate, the smaller ones about 0.5 mm. long and 0.125 mm. wide, the larger ones about 1.25 mm. long and 0.5 mm. wide, irregularly long-pubescent on the outer surface with subvillous multicellular brownish hairs; inner sepals 3, lanceolate-ovate, thin-textured, 2.2--2.5 mm. long, 0.8--1 mm. wide, acute at the apex and base, densely short-puberulent with more or less glandular or capitate hairs on the outer surface; petals 6, broadly elliptic, retuse at the apex, conspicuously clawed at the base (the claw heavy, firm, and dark and extending as a heavy, firm, and dark midrib to the apex of the petal, but rapidly diminishing as the apex is approached), with 2 inflated translucent lobes or wings on either side, which are confluent on the ventral surface and broadly cordate at the base, the inner margins not confluent dorsally, but raised in the form of two parallel longitudinal keels or crests, glabrous throughout; stamens 6, connate for about half their length into a dark firm cylindric or obconic glabrous structure 0.5--0.8 mm. long, the free portion of the filaments stoutish, erect, 0.5--0.8 mm. long, dark, incurved at the apex; anthers oblong, terminal, 2-celled, dehiscing by longitudinal slits, borne almost horizontally during anthesis by the curving of the filament apex, the connective not prolonged or appendaged; pistillate flowers: outer sepals 9, conic-ovate, 0.75--1.5 mm. long, 0.2--0.6 mm. wide, acute at the apex, truncate at the base, densely long-pubescent on the outer surface with subvillous multicellular brownish hairs; inner sepals 3, ovate, 3--3.1 mm. long, 1.9--2 mm. wide, acute at the apex, rounded at the base, densely short-puberulent on the outer surface with more or less glandular capitate hairs; petals 6, ovate or hastate-sagittate, thickened, 1.1--1.2 mm. long, about 1 mm. wide, acute at the apex, the two wings with their basal lobes patent, glabrous and dark throughout, the claw broadened at the apex, the wings not noticeably inflated; pistils 6--9 per flower; ovary gibbous, semi-ovate, asymmetric, flattened on adjacent surfaces, 0.7--0.8 mm. long, densely long-villous; style terete, slender or subfiliform, 1.3--1.5 mm. long, glabrous, uncinatate at the apex. The flowers are described by Glaziou as being reddish-brown in color, blooming in November and December.

The Glaziou 18,129, cited by Diels, is certainly not conspecific with the other Glaziou collections which he cites. Its inflorescences are still very immature, but careful examination indicates that it probably represents a species of Disciphania Eichl.

Citations: Four specimens have been examined. BRAZIL: Rio de Janeiro: Glaziou 8563 (K, P); São Paulo: Glaziou 13,520, in part [O, São Vicente] (K). CULTIVATED: Brazil: Rio de Janeiro: Glaziou 13,520, in part [♂, São Christovão] (P).

XYLOSTEON CANADENSE Duham.

In Rev. Sudam. Bot. 5: 3 (1937) I published a superfluous binomial, Xylosteon album (L.) Moldenke. This binomial was published on the assumption that Asa Gray [Syn. Fl. 2': 201. 1878] and Britton & Brown [Ill. Fl., ed. 1, 3: 241 (1898), ed. 2, 3: 281 (1917 & 1936)] were correct in their reduction of Vaccinium album L. [Sp. Pl., ed. 1, 350. 1753] to Lonicera canadensis Marsh. [Arb. 81. 1785], of which Lonicera ciliata Muhl. [Cat. 23. 1813] is a synonym. Actually, according to Blake in Rhodora 16: 118 (1914), they were in error in making this reduction. Examination of the type in the Linnean herbarium by Blake reveals that it is a species of Symphoricarpos, which Blake calls Symphoricarpos albus (L.) Blake. Druce [Rep. Bot. Exch. Club 1913, 35: 420. 1914] apparently also failed to consult the Linnean type when he proposed the binomial Lonicera alba (L.) Druce for what had hitherto been known as L. canadensis, and likewise ignored the earlier Lonicera alba of Linnaeus, which is a synonym of Chiococca alba (L.) A. S. Hitchc. If the genus Xylosteon is to be maintained, as is done by Rafinesque, Howell, Röhlhng, Michaux, Decaisne, Eaton, Buchanan-Hamilton, Dumort de Courset, Goldie, Bonpland, Ruprecht, Richards, Moench, Fischer, Maximowicz, Pursh, Loddiges, Webb, Fuss, and Small, to mention just a few, then it seems that the name Xylosteon canadense Duham. is the proper one for the species in question. Unfortunately, the last edition of the International Rules invalidates all binomials published in Duhamel's work (1755). The binomial, however, occurs frequently in literature, accredited to Duhamel [e.g., P. DC. Prodr. 4: 337. 1830; Steud. Nom. Bot., ed. 2, 2: 793. 1840; Jacks. Ind. Kew. 2: 1241. 1895]. Probably a valid publication of this binomial could be found among the various effective publications, if diligent search were made.

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(a) The term "chartaceous" in previous publications of mine was mis-used in the sense of "thin-membranous" and the term "membranous" was mis-used in the sense of "chartaceous". In

the present contributions and in all future publications, a special effort will be made to use these two terms in their proper and more correct sense.

TWO NEW SPECIES OF *PLENCKIA* (a)

C. L. Lundell

PLENCKIA INTEGERRIMA Lundell, sp. nov.

Arbor parva, 3--4 m. alta, 20 cm. diam. Folia alterna, integerrima, parva, subchartacea, rufo-punctata, breviter petiolata, cuneato-oblongata, 1.5--3.3 cm. longa, 5--11 mm. lata, apice rotundata, inconspicue emarginata. Cymae axillares. Flores parvi, virides. Pedicelli 4--5 mm. longi, glabri. Calyx profunde quinquefidus, lobis minute eroso-ciliolatis, ca. 0.6 mm. longis. Petala 5, ovata, 1.5--2 mm. longa, 1.2--1.4 mm. lata, minute eroso-ciliolata. Stamina 5, demum patentia. Ovarium in discum subimmersum, biloculare, loculis biovulatis, rarius triovulatis. Fructus samaroides.

A small tree, 3 or 4 m. high, 20 cm. in diameter; branchlets usually slender, elongated, sometimes abortive and spine-like, striate, pulverulent. Leaves alternate, small, glabrous or slightly pulverulent, subchartaceous, punctate-variegated at first, concolorous and faintly variegated with age. Petioles 1.5 mm. long or less, subcanaliculate. Leaf-blades cuneate-oblongate, usually 2.5 to 3.3 cm. long, sometimes only 1.5 cm. long, 5 to 11 mm. wide, apex rounded, usually slightly emarginate, costa raised above as a fine narrow ridge, nearly obsolete below except at base, veins obsolete or nearly so, margin entire, slightly revolute. Cymes axillary, less than 1 cm. long, much reduced, usually 2- or 3-flowered. Flowers green. Pedicels slender, usually 4 to 5 mm. long, sometimes shorter, glabrous, jointed above the base. Calyx deeply 5-lobed, apparently glandular-puberulent, the lobes 0.6 mm. long or less, rounded, minutely erose-ciliate. Petals 5, ovate, 1.5 to 2 mm. long, 1.2 to 1.4 mm. wide, apex broadly rounded, patent, margin minutely erose-ciliate. Stamens 5, patent at anthesis; filaments subulate, 0.6 mm. long or less, inserted on lower edge of disk; anthers basally attached. Disk thick, pentagonal, confluent with ovary. Ovary 2-celled, with 2 or 3 erect ovules in each cell, about two-thirds submerged in disk, the free part slightly compressed laterally, 2-angled, tapering into the very short style. Stigma minutely bifid. Very young immature fruits samaroid, with a terminal wing, punctate-

variegated, the rounded or subtruncate apex crowned by the persistent stigma and style, 1-seeded.

Type in the Herbarium of Arnold Arboretum, S. Venturi 1936, young leaves, flowers, and young fruits, collected at Vipas, Department of Francas, Province of Tucuman, Argentina, at alt. of 850 m., December, 1922.

Additional specimens examined: ARGENTINA: Province of Tucuman, Department of Francas, Vipas, alt. 800 m., Oct. 1921, Venturi 1376, flowers. Province of Salta, Department of Candelaria, alt. 1000 m., Nov. 15, 1929, Venturi 9786, flowers.

The abortive spine-like branches, small entire leaves, and the much reduced inflorescence are among the outstanding characteristics which distinguish P. integerrima. All the other species in the genus have larger, serrate or serrulate leaves.

PLENCKIA MICROCARPA Lundell, sp. nov.

Arbor glabra, parva, 5--6 m. alta. Folia parva, alterna, chartacea, crenulato-serrulata, 8--20 mm. longe petiolata, ovata, late elliptica, vel suborbicularia, 2.5--3.5, raro 4.6 cm. longa, 1.6--2.7, raro 3.7 cm. lata, apice breviter acuminata vel acutiuscula, basi rotundata, obscure subcordata, vel abrupte acuta, utrinque reticulata. Cymae axillares. Flores parvi. Pedicelli ca. 1 mm. longi. Calyx profunde quinquefidus, lobis rotundatis, minute ciliolatis. Petala 5, suborbicularia, 1.3--1.6 mm. longa, minute eroso-ciliolata. Ovarium in discum subimmersum, biloculare, loculis biovulatis. Fructus samaroideus, oblanceolati-oblongus, 1.4--1.6 cm. longus.

A glabrous tree, 5 to 6 m. high, much-branched; branchlets slender, striate, drying reddish or reddish-black. Leaves alternate, small, chartaceous, concolorous or slightly paler beneath, minutely stipulate. Petioles very slender, shallowly canaliculate, 8 to 20 mm. long. Leaf-blades ovate, broadly elliptic, or suborbicular, usually 2.5 to 3.5 cm. long, sometimes as much as 4.6 cm. long, usually 1.6 to 2.7 cm. wide, sometimes as much as 3.7 cm. wide, apex short-acuminate or acutish base rounded, obscurely subcordate, or abruptly acute, margin crenulate-serrulate, reticulate-veined, costa and veins prominulous on both surfaces. Cymes axillary, much-branched, usually 1.5 cm. long or less, rarely 2 cm. long. Flowers minute, whitish. Pedicels about 1 mm. long. Calyx deeply 5-lobed, the lobes rounded, minutely ciliolate. Petals 5, suborbicular, 1.3 to 1.6 mm. long, minutely erose-ciliolate. Stamens 5; filaments about 0.5 mm. long, inserted on margin of disk; anthers attached at base. Ovary almost entirely submerged in disk, 2-celled, with 2 erect ovules in each cell. Stigma capitate. Samaras oblanceolate-oblong, small, 1.4 to 1.6 cm. long, including the wing, apex

rounded, crowned by the persistent stigma, the body 9 to 11 mm. long, terete, striate, with the wing decurrent along the sides to the base, 1-seeded; the seed erect, about 12 mm. long, dark red and minutely verrucose; cotyledons nearly flat, lanceolate-linear, about 1 cm. long, 1.2 mm. wide; radicle very short, about 0.7 mm. long.

Type in the Royal Botanic Gardens, Kew, B. Balansa 4477, fruits, collected on the east slope of Cerro Hu, near the Paraguay, Paraguay, April 10, 1883.

Additional specimens examined: PARAGUAY: in forest, Cerro Hu, near the Paraguay, Oct. 1881, Balansa 3079, flowers. BRAZIL: Minas, M. A. Glaziou 16741, flowers.

P. microcarpa differs from P. populnea Reiss. in its small fruits which do not exceed 1.6 cm. in length, and small leaves. From P. bahiensis Loes. it may be readily distinguished, according to description, by the small ovate leaves and longer petioles.

(a) Papers from the Herbarium of the University of Michigan.

TWO NEW SPECIES OF ERYTHRINA FROM CENTRAL AMERICA

B. A. Krukoff

ERYTHRINA FOLKERSII Krukoff & Moldenke, sp. nov.

Arbor; ramulis glabris; petiolis glabris inermis; petioulis subgracilibus glabris; laminis foliorum chartaceis plerumque late ovatis glabris, ad basin rotundatis vel subtruncatis; inflorescentiis dense tomentosis; pedicellis dense tomentosis; calyce tubuloso-campanulatis extus adpressotomentellis, ad apicem rotundatis et saepe emarginatis.

A small or medium-sized tree; branchlets stout, grayish, glabrous; petioles rather stout, striate, yellowish, 21--23 cm. long, glabrous, unarmed; petiolules rather slender, 0.8--1.0 cm. long, glabrous; leaflet-blades chartaceous, green above, slightly paler beneath, usually broadly ovate, 11--18 cm. long, 7.5--13.5 cm. wide, acute or short-acuminate at apex, rounded or subtruncate at base, glabrous; midrib prominent above and beneath; secondaries 6 or 7 per side, ascending, prominent above and beneath; tertiaries prominulous on both surfaces; veinlet reticulation discernible to the naked eye above and beneath; inflorescences 17--36 cm. long, densely covered with rather loose brown toment-

um; pedicels 0.4--0.7 cm. long, with tomentum similar to that of the inflorescences; calyx coriaceous, tubular-camp-anulate, 1.4--2.3 cm. long on the ventral side, 1.1--1.7 cm. long on the dorsal side, about 0.3 cm. wide at base, gradually ampliate to about 0.8 cm. at apex, asymmetric, rounded at apex and often emarginate, usually more or less crenulate at apex, appressed-tomentellous throughout; standard firmly membranous, oblanceolate, to 8.2 cm. long and 2.4 cm. wide, broadly rounded at apex, gradually narrowed to the base, scarcely or not at all clawed; wings thin-membranous, obovate, not at all sagittate or hastate (!), 0.8--0.9 cm. long, about 0.3 cm. wide at the widest part, rounded at apex, cuneately narrowed to the base; keel-petals thin-membranous, strongly asymmetric, sublabelliform-obovate, 0.8--0.9 cm. long, straight on the adjacent sides, flaring toward the apex on the outer side, 0.4--0.5 cm. wide near the apex, subcuneate at base; stamens to 6.5 cm. long, glabrous; pods blackish, 11--27 cm. long, usually not coiled, regularly and deeply constricted between each seed, tapering below into a stipe about 3 cm. long, abruptly terminated at apex by a stiff slender acumination about 2 cm. long; seeds scarlet, about 1.1 cm. long, with a distinct dark line extending from the hilum for approximately 0.2 cm. toward the chalazal end of the seed.

Type, H. H. Bartlett 11513, collected on February 15, 1931, between El Cayo and Benque Viejo, in British Honduras, and deposited in the Herbarium of the University of Michigan. Other collections from the same district are W. A. Schipp 935, Mercedes Chanek 74 and 102, and J. B. Kinloch 9163; also Chas. C. Deam 49 collected near Puerto Barrios, Guatemala.

It is a pleasure to name this species in honor of Dr. Karl Folkers, who succeeded in isolating several useful alkaloids from the seeds of certain species of Erythrina.

Until J. B. Kinloch 9163 became available this species was represented only by flowers and fruits. When in flower it is devoid of leaves. The species is apparently confined to the Atlantic coast. From E. rubrinervia H.B.K. and all other species which have the calyx somewhat resembling in shape that of the present species, it is immediately distinguished by its inflorescences and pedicels being densely covered with rather loose brown tomentum, by its calyx being appressed-tomentellous throughout, and by other characters indicated in the diagnosis.

ERYTHRINA NEGLECTA Krukoff & Moldenke, sp. nov.

Arbor; ramulis glabris plerumque spinosis; petiolis glabris plerumque spinosis; petiolulis crassiusculis parce puberulis mox glabrescentibus; laminis foliolorum subcoriaceis

rhomboideo-ovatis parce puberulis mox glabrescentibus, basin versus rotundatis vel subauriculatis, ima basin triangulato-cuneatis (rare truncatis); inflorescentiis glabris; pedicellis glabris; calyce tubuloso, extus glabris, ad apicem rotundatis et emarginatis.

A small spreading tree; branchlets stout, grayish, glabrous, often armed with spines; petioles rather stout, striate, brownish or yellowish, 10–22 cm. long, glabrous, often armed with short curved spines; petiolules rather stout, 0.9–1.3 cm. long, sparingly puberulent, soon glabrescent; leaflet-blades subcoriaceous, green above, distinctly paler beneath, sparingly puberulent when young, soon glabrescent; terminal leaflets usually rhombic-ovate, 7–14 cm. long, 7–15 cm. wide, acute or short-acuminate at apex, rounded or subauriculate toward the base and then often triangularly cuneate, rarely truncate at base; lateral leaflets similar in outline to the terminal ones, but inequilateral and smaller; midrib flat or prominulous above, prominent beneath; secondaries 6–8 per side, ascending, prominulous above, prominent beneath; tertiaries prominulous on both surfaces; veinlet reticulation mostly obscure or indiscernible above, the larger portion discernible to the naked eye beneath; inflorescences 16–23 cm. long, glabrous; pedicels about 0.7 cm. long, glabrous; calyx coriaceous, tubular, 1.7–2.2 cm. long on the ventral side, 1.0–1.7 cm. long on the dorsal side, 0.6–0.7 cm. wide, approximately equal in width throughout, except at the narrowed and asymmetric base, the very apex rounded and emarginate, minutely crenulate, not surmounted by an acute triangular tooth, glabrous throughout; standard firmly membranous, narrowly oblanceolate, to 8.6 cm. long, to 1.4 cm. wide at the widest part, subacute at apex, gradually narrowed to the acuminate base or short-clawed, slightly recurved toward apex; wings thin-membranous, lanceolate-sagittate, slightly asymmetric, 0.9–1.0 cm. long, 0.2–0.25 cm. wide at the widest part, rather obliquely subacute at apex, very slightly clawed at base; keel-petals thin-membranous, strongly asymmetric, 0.9–1.0 cm. long, straight to about the middle on the adjacent sides, incurved toward the apex, rather sharply acute at apex, flaring on the outer side, to 0.25 cm. wide near the base, short-clawed at base; stamens to 5.5 cm. long, glabrous; pods blackish, about 16 cm. long, often coiled, irregularly constricted between some of the seeds, tapering below into a stipe about 4 cm. long, abruptly terminated at apex by a stiff slender acumination about 2.5 cm. long; seeds scarlet, about 0.9 cm. long, with a distinct dark line extending from the hilum for approximately 0.2 cm. toward the chalazal end of the seed.

Type, R. S. Williams 372, collected February 23 — March

22, 1908, at Penonome and vicinity, at 50--1000 feet elevation, in Panama, and deposited in the herbarium of the New York Botanical Garden. Other collections are H. Pittier 6939, collected at the Agricultural Experiment Station at Matias Hernandez in Panama, and J. M. Benitez 9159 from El Zapote, Escuintla, Guatemala.

This species is common in Central America and is well represented in herbaria. It has been often confused with E. rubrinervia H.B.K. in the past, from which species, however, it can be immediately distinguished by the fact that in the latter species the very apex of the calyx is also rounded, but is surmounted by a sharply acute triangular membranous tooth 1.5--2 mm. long (imparting to the calyx-apex a sharply acute appearance when fresh), the seeds are larger and without a distinct dark line extending from the hilum toward the chalaza, and the leaflets are narrower, acuminate or long-acuminate at the apex, cuneate or rarely rounded at the base, and only slightly paler beneath.

ERYTHRINA EGGERII Krukoff & Moldenke, nom. nov.

Erythrina horrida Eggers, Fl. St. Croix 45. 1879 [not Erythrina horrida Moc. & Sesse ex P. DC. Prodr. 2: 413. 1825].

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- IV

Harold N. Moldenke

The following notes constitute a continuation of those published in *Phytologia* 1: 182--208, 222--240, and 248--272 (1937). Herbarium abbreviations herein employed, in addition to those published in *Brittonia* 1: 249--250 (1934) and *Phytologia* 1: 182 and 222 (1937) are: Gt = Botanische Anstalten, Göttingen; Kr = B. A. Krukoff Herbarium, New York Botanical Garden, New York City; and Na = Natal Government Herbarium, Durban, Natal.

The generic name is mis-spelled "Aegiphita" in Fedde, *Rept.* 42: 248 (1937). To date 205 publications on the genus have been reviewed and the list of contributors to our knowledge of the genus embraces 585 persons. One hundred and forty-nine species and varieties are accepted as valid (including 4 doubtful species) and 246 names have been reduced to synonymy. A complete alphabetic list of the latter will be published in the next installment of these notes, with the disposition which has been made of each for ready reference. The types or original collections on which 140 of the

accepted names and 207 of the rejected names were based, have been examined in the course of this study. In all, 4766 herbarium specimens of the genus, in 51 herbaria, representing 145 accepted species and varieties, and 2708 mounted photographs and illustrations, in 18 herbaria, representing 138 accepted species and varieties, have been examined and annotated. In number of specimens the largest collection of the genus is at Berlin, where there are 529 specimens at the present time; the second largest collection is at New York (518 specimens), followed by Kew (467), Paris (450), United States National Herbarium (404), and the Conservatoire Botanique at Geneva (321). In number of species and varieties represented the best collection is at New York (115), followed by the United States National Herbarium (90), Kew (85), Berlin (82), Conservatoire Botanique at Geneva (68), and Paris (66).

49a. *AEGIPHILA ACULEIFERA* Moldenke.

Additional citations: COSTA RICA: San José: H. Pittier 7584 (E--photo, N--2 photos, S--photo, Z--2 photos).

3a. *AEGIPHILA ALBA* Moldenke.

Additional citations: ECUADOR: Los Ríos: Mexia 6656 (N--photo of type, Z--photo of type).

21a. *AEGIPHILA AUSTRALIS* Moldenke.

Additional citations: BRAZIL: Santa Catharina: Ule 1520 (N--photo of type, Z--photo of type).

3. *AEGIPHILA BOGOTENSIS* (Spreng.) Moldenke.

This binomial is incorrectly accredited to "(H.B.K.) Moldenke" by me in *Phytologia* 1: 188 (1937).

Additional citations: COLOMBIA: Santander Norte: Schlim 306 (Br).

120. *AEGIPHILA BRACTEOLOSA* Moldenke.

Additional citations: BRAZIL: Amazonas: Ducke 444 (N, W).

98. *AEGIPHILA CHRYSANTHA* Hayek.

Klug describes this species as a liana and collected it in anthesis in March and April, in forests at an altitude of 200 m. in Loreto, Peru.

Additional citations: PERU: Loreto: Klug 2027 (S).

10. *AEGIPHILA COSTARICENSIS* Moldenke.

This binomial was erroneously cited by the Gray Herbarium Card Index of New Species and Varieties, issue 142, to "Ann. Mo. Bot. Gard. 33: 119. 1933", but this was later rectified on a correction card.

A new synonym is Clerodendron Matudae Standl., Field Mus. Publ. Bot. 17: 206--207 (1937), of which the type was collected on Mt. Orando, Chiapas, Mexico, by Eizi Matuda (No. 572) on December 16, 1936, deposited in the herbarium of the University of Michigan. This constitutes a notable extension in the range of the species.

Additional citations: MEXICO: Chiapas: Matuda 572 (M1--2, N--fragment & photo, S--photo, Z--photo).

117. AEGIPHILA DEPPEANA Steud.

The species, according to Dugand and Mina, is called "saúco de monte" in Colombia, where it has been collected at an altitude of 100--200 m. The flowers are described as "small, tubular, reddish". The Dugand & Mina collection has been erroneously distributed as A. mollis.

Additional citations: COLOMBIA: Magdalena: Bertero s.n. (N--photo, Z--photo); Department undetermined: Dugand & Mina 950 (N). CULTIVATED: England: P. Miller 8 [Herb. Linnaeus G.810, S.9] (N--photo).

124. AEGIPHILA ELATA Sw.

The Moritz 973 and 1478, cited by me in Phytologia 1: 199 (1937) as from an undetermined state in Venezuela, were actually collected in the State of Trujillo. The Kegel 173 and "Hostmann H.L.B. 903, 322--349", cited by Pulle in his Enum. Vasc. Pl. Surin. 403 (1906) are actually A. laevis.

Additional citations: JAMAICA: P. Browne s.n. [Herb. Linnaeus G.810, S.8] (N--photo). MEXICO: Veracruz: Ll. Williams 9143 (N), 9271 (N), 9566 (N).

61. AEGIPHILA FALCATA Donn. Sm.

Additional citations: MEXICO: Chiapas: Matuda 666 (N).

31. AEGIPHILA FERRUGINEA Hayek & Spruce.

The species has been collected by Rimbach in forests, blooming in September.

Additional citations: ECUADOR: Chimborazo: Rimbach 616 [Mus. Yale School of Forestry 31,994] (N--2, S).

63. AEGIPHILA FILIPES Mart. & Schau.

Krukoff, on the label of the collection cited below, describes the species as a shrub 18 feet tall, with a stem one inch in diameter.

Additional citations: BRAZIL: Amazonas: Krukoff 8042 (N).

62. AEGIPHILA GLANDULIFERA Moldenke.

Klug has collected the species in forests, at an altitude of 220 meters, in full anthesis in April.

Additional citations: PERU: Loreto: Klug 3016 (S).

62b. *AEGIPHILA GLANDULIFERA* var. *PYRAMIDATA* L. C. Rich. & Moldenke.

The Moritz 364, cited by me in *Phytologia* 1: 204 (1937) as from an undesignated State of Venezuela, was actually collected in the State of Monagas.

Additional citations: BRAZIL: Pará: L. C. Richard s.n. (E--photo of type, S--photo of type, W--photo of type).

19. *AEGIPHILA GRAVEOLENS* Mart. & Schau.

Additional citations: BRAZIL: São Paulo: Lund 796 [Macbride photos 7880] (N--photo of type, Z--photo of type).

115a. *AEGIPHILA HOEHNEI* Moldenke.

Additional citations: BRAZIL: Amazonas: Kuhlmann, Com. Rondon 2277 [Herb. Inst. Biol. S. Paulo 33,425] (E--photo of type, N--photo of type, S--photo of type, W--photo of type, Z--photo of type).

42. *AEGIPHILA INTEGRIFOLIA* (Jacq.) Jacks.

The Mexia 4203 and 4500 cited by me as this species in *Brittonia* 1: 339 (1934) and *Phytologia* 1: 228 (1937) seem to represent *A. Sellowiana* instead.

Additional citations: BRITISH GUIANA: M. R. Schomburgk 404, in part (Br). PERU: San Martín: Klug 3468 (S).

44. *AEGIPHILA INTERMEDIA* Moldenke.

Additional citations: BRAZIL: Amazonas: Ducke 136 (W).

82. *AEGIPHILA KILLIPII* Moldenke.

This specific name already occurs in some herbaria misspelled "Killippii".

53. *AEGIPHILA LAETA* H.B.K.

The Saer 602, cited by me in *Phytologia* 1: 229 (1937) as from an undetermined State of Venezuela, is actually from the State of Lará, and the Mocquerys 1018, cited by me on the same page, was actually collected in the State of Zulia.

Additional citations: COLOMBIA: Caldas: Bonpland 1664 (E--photo of type, S--photo of type, W--photo of type).

78. *AEGIPHILA LAEVIS* (Aubl.) Gmel.

The species has been described as a shrub or tree 6--20 feet tall in the forests of Surinam. It is often confused with *A. elata*. The Kegel 173 and 687 and "Hostmann H.L.B. 903, 322--349" cited by Pulle in his *Enum. Vasc. Pl. Surin.* 403 (1906) as *A. elata* are actually *A. laevis*. An additional synonym is *Aegiphila laevis* f. *angustifolia* Wulfschl., in herb.

Additional citations: SURINAM: Kegel 173 (Gt), 687 (Gt); Wulschlägel 405 (Gt), 1983 (Gt).

76. AEGIPHILA LAXIFLORA Benth.

The Otto 1092 cited by me in Brittonia 1: 391 (1934) and in Phytologia 1: 231 (1937) as from an undetermined State of Venezuela, was actually collected in the State of Bolívar.

67. AEGIPHILA LONGIFOLIA Turcz.

Additional citations: COLOMBIA: Santander Sur: Schlim 688 (Br--isotype).

71. AEGIPHILA MARTINICENSIS Jacq.

The Otero 308, cited below, definitely represents the "variabilis" form of the species -- almost all of the several hundred calyxes on the specimen are deeply lobed!

Additional citations: PORTO RICO: Otero 199 (Kr), 308 (Kr). DOMINICA: G. P. Cooper 60 (N), 167 (N). MARTINIQUE: Stehlé 2127 (N).

83. AEGIPHILA MOLLIS H.B.K.

Elías 1458, erroneously distributed under this name, is (at least insofar as the New York specimen is concerned) a species of Phoradendron, while Dugand & Mina 950, also distributed as A. mollis, is actually A. Deppeana.

Additional citations: COLOMBIA: Cundinamarca: Bonpland s. n. (E--photo, S--photo, W--photo). VENEZUELA: Amazonas: Bonpland 983 (E--photo, S--photo, W--photo). BOLIVIA: Santa Cruz: Steinbach 14,781 (S).

13. AEGIPHILA MONSTROSA Moldenke.

Additional citations: MEXICO: Oaxaca: Ll. Williams 9120 (N).

7a. AEGIPHILA MORTONI Moldenke.

Additional citations: PERU: Cuzco: Cook & Gilbert 1234 (N --photo of type, Z--photo of type).

69. AEGIPHILA PANAMENSIS Moldenke.

Hayes describes the species as a shrub 12--15 feet tall, with light sulphur-colored flowers.

Additional citations: COSTA RICA: Alajuela: Brenes 4030 (N), 4345b (N); San José: Skutch 2680 (S). PANAMA: Canal Zone: Hayes s.n. [Panama, Dec. 7, 1862; Natal Herb. 10,208] (Na).

34. AEGIPHILA PARAGUARIENSIS Briq.

Additional citations: BRAZIL: São Paulo: Carvalho s.n. [Herb. Inst. Biol. S. Paulo 748] (W).

64. AEGIPHILA PERUVIANA Turcz.

Klug has collected the species at an altitude of 1100--1600 meters in San Martín, Peru.

Additional citations: PERU: San Martín: Klug 3511 (S).

60. AEGIPHILA PLICATA Urb.

The isotype of A. plicata, cited below, from the De Candolle Herbarium, was mounted on the same sheet there with an isotype of A. trifida Sw.

Additional citations: JAMAICA: Bertero 2105 (N--photo of isotype, Z--photo of isotype).

91. AEGIPHILA QUINDUENSIS (H.B.K.) Moldenke.

This binomial appears mis-spelled "Aegiphita quinduensis" in Fedde, Repert. 42: 248 (1937). The reference given by me in Brittonia 1: 415 (1934) for Petitita tenuifolia should read "Willd. ex Schult. in Roem. & Schult. Syst. Veg. Mant. 3: 50. 1827 [not P. tenuifolia Willd. ex Walp. Repert. 4: 72, in syn. 1845]" and the reference for Petitita quinduensis should be dated "1818".

44a. AEGIPHILA SALTICOLA Moldenke.

Additional citations: BRAZIL: Pará: Mexia 5922 (S--isotype).

63a. AEGIPHILA SCANDENS Moldenke.

Additional citations: BRAZIL: Acre Territory: Ule 9721 (E--photo of type, S--photo of type, W--photo of type).

108a. AEGIPHILA SCHIMPFII Moldenke.

Additional citations: ECUADOR: Province undetermined: Schimpff 1003 (E--photo of type, N--photos of type & of isotype, Z--photos of type & of isotype).

39. AEGIPHILA SELLOWIANA Cham.

Mexia 4203 and 4500, cited by me under A. integrifolia in Brittonia 1: 339 (1934) and Phytologia 1: 228 (1937), seem, rather, to represent A. Sellowiana and they are therefore now cited here below.

Additional citations: BRAZIL: Minas Geraes: Mexia 4203 (B, Bm, Gb, D, E, G, I, N, P, S, W), 4500 (A, B, Bm, Gb, D, E, G, I, Kr, N, P, S, W).

94. AEGIPHILA SMITHII Moldenke.

Miss Mexia describes the species as a common woody vine, climbing up medium-sized trees, blooming in February, with white flowers, inhabiting cut-over woods at an altitude of about 110 m.

Additional citations: PERU: Loreto: Mexia 6499 (S).

14. AEGIPHILA SORDIDA Moldenke.

Additional citations: PERU: Loreto: Killip & Smith 27,793 (W).

123. AEGIPHILA SUFFLAVA Moldenke.

Klug collected the species in a forest at an altitude of 200 meters, blooming in March and April, and describes it as a liana with yellow flowers.

Additional citations: PERU: Loreto: Klug 2076 (S), 2574 (N).

123a. AEGIPHILA SUFFLAVA var. KLUGII Moldenke, var. nov.

Haec varietas a forma typica speciei recedit per omnes partes densiore strigoso-pubescentibus (pilis elongatis valde adpressis sufflavis) et calicibus usque ad 7 mm. longis et 5.5 mm. latis extus glandulis rotundatis ornatis.

This variety differs from the typical form of the species in being more densely strigose-pubescent throughout, with longer and decidedly appressed yellowish hairs, and having larger calyxes (to 7 mm. long and 5.5 mm. wide), which are marked with several rounded glands near the apex outside, often a gland on every lobe.

The type of this variety was collected by Guillermo Klug (No. 2511) in a forest, altitude 100 meters, at Mishuyacu, near Iquitos, Loreto, Peru, in February, 1932, deposited in the Britton Herbarium of the New York Botanical Garden, and is named in his honor. It is described as a liana.

Citations: PERU: Loreto: Klug 2511 (N--type).

56. AEGIPHILA TRIFIDA Sw.

The isotype cited below, from the De Candolle Herbarium, was mounted on the same sheet there with an isotype of A. plicata Urb.

Additional citations: JAMAICA: Swartz s.n. [Jamaica] (N--photo of isotype, Z--photo of isotype).

37. AEGIPHILA VERTICILLATA Vell.

Additional citations: BRAZIL: Minas Geraes: Riedel 313 (L--3); Schwacke 9941 (Cb), 13,726 (Cb); Warming s.n. [Lagoa Santa] (Cp--3); Widgren 1222 (Br), s.n. [Minas Geraes] (Br, S); São Paulo: Burchell 4068 (K), 4105 (K); Campos Novae 933 (Vu); Gehrt s.n. [Herb. Inst. Biol. S. Paulo 5489] (N); Glaziou 8184 (Op, P, Z--photo); Guillemin 515 (Z--photo); Lund 820 (Bm, Cp--2, Dc), s.n. [Taubaté, November '33] (Dc); Martius 480 [Herb. Monac. 1045] (Mu), s.n. [Herb. Monac. 1046 & 1047] (Mu--2); Riedel & Luschath 1453 (L--2); Saint-Hilaire C'. 1016 (P--3); Schwacke 6594 (Cb); Sellow 2267 (B, Z--2 photos), 5122 (B--2, N--2 photos, Z--2 photos); Usteri 20 (B), 21 (B); Paraná: Dusén 7236 (E, W), 14,871 (W),

15,982 (B, E, N--2 photos, Z--2 photos), s.n. [Jaguariahya, May 1914] (B, Cb, G, K); Jönsson 405a (A--photo, B--photo, D--photo, F--photo, K--photo, N--photo, P--photo, S--photo, U--photo, V--photo, W--photo, X--photo, Z--photo); State undetermined: Raben 876 (Br); Sellow s.n. [Brasilia] (B, Br, K--3). PARAGUAY: Hassler 11,260 (Z--photo).

45. AEGIPHILA VILLOSA (Aubl.) Gmel.

An additional synonym is Manabea tomentosa Perrottet, in herb. The generic name Manabea is sometimes mis-spelled "Monobea". On page 343 of my monograph I stated that the lower surface of the leaf-blades is tomentose. This is an error of terminology. Actually the lower leaf-surfaces are villous with long straight hairs. The type specimen was collected near Cayenne, French Guiana, and is deposited in the herbarium of the British Museum (Natural History) in London.

Additional citations: BRITISH GUIANA: Jenman 4068 (N, N--photo, U, Z--2 photos), 6689 (U), 6869 (K, Z--photo). FRENCH GUIANA: Aublet s.n. [Cayenne] (Bm--type); Benoist 1306 (P--3); Collector undesignated 354 (Us), 359 (Us); Leblond 269 (P); Leprieur s.n. [Guiana française, 1838] (Le, P--2), s.n. [Guyane française, 1840] (Cb); J. Martin s.n. [Cayenne] (Bm, P--2); Mélinon 128 (K, P), 145 (Cb, N--photo, P, Z--photo), 372 (B--4, Bm, K, N--2 photos, P, Z--3 photos), 439 (P); Perrottet s.n. [1820] (Cb--3); Poiteau s.n. (Dc, P, Z--2 photos); L. G. Richard s.n. [Guian. fr.] (N--photo, P--2, Z--photo); Sagot 472 (A--photo, B--photo, Bm, Cb--2, D--photo, F--photo, G--photo, K, N--photo, P--3, Ut, V, W--photo, Z--photo), s.n. [Cayenne, Mars 1859] (P); Von Rohr s. n. [Cayenne] (Bm); Wachenheim 175 (P). ILLUSTRATIONS: Aubl. Hist. Pl. Guian. 1: 61. 1775 (P); Lamarck, Illustr. pl. 70, f. 2. 1791 (B).

111. AEGIPHILA VILLOSISSIMA Moldenke.

Additional citations: BRAZIL: Mattogrosso: Krukoff 1400 (N--photo of type & of 2 isotypes, W--photo of type, Z--photo of type & of 2 isotypes).

96. AEGIPHILA VITELLINIFLORA Klotzsch.

Klug describes the species as a liana, with yellow flowers, and collected it in forests at an altitude of 200 meters, blooming from March to July. An additional synonym is Aegiphila compacta Mart., in herb. The species is said to also inhabit thickets. It has been confused by some with A. filipes; Bowie & Cunningham confused it with A. foetida and Zuccarini confused it with A. martinicensis! The type specimen of A. cuspidata Mart. is deposited in the Munich herbarium. The "Hoehne s.n. [Inst. Biol. 20,562]" cited by me on page 473 of my monograph is actually A. lanceolata; its be-

ing referred to A. vitelliniflora was through a typographic error. The "Instituto Biologico de Defesa Agricola e Animal, São Paulo" citations listed on page 474 will hereafter for convenience be referred to as "Herb. Inst. Biol. S. Paulo". The Nos. 20,099 and 20,562 cited in this list as A. vitelliniflora are actually A. lanceolata. On page 423 the "Cult. Hort. Berol. s.n. (B--type, B--isotype, B--cotype?)" should read as follows: "Cult. Hort. Berol. s.n. [Jun. 1831] (B); Lystler s.n. [Cult. Hort. Berol. Sept. 1839] (B--type & isotype)".

Additional citations: PERU: Loreto: Klug 2104 (A, B, E, G, K, Ml, S, W), 2204 (B, Cb, E, G, K, S, W). BRAZIL: Rio Grande do Norte: Schott 4917 (V--2); Pernambuco: G. Gardner s.n. [1838] (Bm, Z--photo); Pickel 1084 (B, I); Bahia: Blanchet 163 (Cb), 1294 (Cb), 3269 (Bm, Br, Cb--3, F, P, V, X, Z--photo); Luschmuth s.n. [Herb. Martius 1041; Herb. Monac. 1014] (A--photo, Br, Dc, F--photo, G--photo, K, Le, Mu, N--2 photos, Z--2 photos); Minas Geraes: Clausen s.n. (Cb); Warming 291 (Op), s.n. [Lagoa Santa] (Bm, Cp--2, F, P); Matto-grosso: Gaudichaud 60 (P); Rio de Janeiro: Barboza s.n. [1846] (Br--2); Burchell 2625 (K, Le); Gaudichaud 107 (Cb, Dc, P); Glaziou 807 (Br--2, Cp, P, Z--photo), 8831 (Cb--2, Cp, K, N--photo, P--2, Z--photo); Miers s.n. [Mage to Freichal, 1 May 1838] (Bm); Rudio s.n. (N--photo, Z--photo); Schüch s.n. [Sebastianopolis] (A--photo, B--photo, D--photo, F--photo, G--photo, Mu, N--photo, S--photo, V--3, W--photo, Z--2 photos); Sellow 346 (B, N--photo, Z--photo), 1020 (B), s.n. (Z--2 photos); Vauthier 15 (Cb); Weddell 578 (Cb, P); São Paulo: Riedel & Lund 0,39 (L); Rio Grande do Sul: Blanchet 904 [Herb. Monac. 1015] (Bm, Br, Cb, Mu); State undetermined: Bowie & Cunningham 336 (Bm--fruit), 496 (Bm); Herb. Imp. Vien. 152 (K); Mendonça 477 (B); Raben s.n. (Cp); Swainson s.n. (K). BOLIVIA: Santa Cruz: D'Orbigny 509 (Z--photo), 554 (Z--photo). CULTIVATED: Germany: Collector undesignated s.n. [H.B. 30] (B); Cult. Hort. Berol. s.n. [Jun. 1831] (B, N--photo, Z--2 photos); Herb. Zuccarini s.n. [Herb. Monac. 1016] (Mu); Lystler s.n. [Cult. Hort. Berol. Sept. 1839] (A--photo of isotype, B--photo of isotype, D--photo of isotype, F--photo of isotype, N--photo of isotype, S--photo of isotype, W--photo of isotype, Z--photos of type & of isotype). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Caes. Petrop. s.n. [Herb. Martius] (Br). ILLUSTRATIONS: Martin f. I, II, & III (B); Martius, Fl. Bras. 9, tab. (B).

The geographic distribution of the species and varieties of Aegiphila:

OUBA: A. aurea [Havana] -- A. elata [Pinar del Río, Havana, Santa Clara, & Oriente] -- A. martinicensis.

- CAYMAN ISLANDS: A. caymanensis -- A. elata -- A. martinicensis.
- JAMAICA: A. elata -- A. foetida -- A. martinicensis -- A. martinicensis var. oligoneura -- A. nervosa -- A. obtusa -- A. plicata -- A. punctata -- A. Swartziana -- A. trifida -- A. uniflora.
- HISPANIOLA: A. elata [Haiti & Dominican Republic] -- A. nervosa [Haiti].
- PORTO RICO, MARTINIQUE: A. elata -- A. martinicensis -- A. martinicensis var. oligoneura.
- ST. THOMAS, ST. JOHN, ST. CROIX, ST. EUSTACHE, ANTIGUA, GUADELOUPE, ST. LUCIA, GRENADA: A. martinicensis.
- ST. KITTS, MONTserrat, DOMINICA, ST. VINCENT: A. martinicensis -- A. martinicensis var. oligoneura.
- BARBADOS: A. barbadensis -- A. martinicensis.
- TOBAGO: A. obovata -- A. perplexa.
- TRINIDAD: A. elata -- A. integrifolia -- A. laxiflora -- A. macrantha -- A. martinicensis -- A. obovata -- A. perplexa.
- MEXICO: A. costaricensis [Chiapas] -- A. Deppeana [Tamaulipas, Nayarit, Hidalgo, Veracruz, Oaxaca, & Chiapas] -- A. elata [Veracruz, Oaxaca, & Tabasco] -- A. falcata [Chiapas] -- A. monstrosa [Oaxaca].
- GUATEMALA: A. elata [Alta Verapaz & Izabal] -- A. falcata [Quezaltenango, Retalhuleu, Suchitepequez, & Escuintla] -- A. fasciculata [Alta Verapaz] -- A. Hastingsiana -- A. laxicipulis [Chiquimula & Santa Rosa] -- A. monstrosa [El Petén, Alta Verapaz, & Izabal].
- BRITISH HONDURAS: A. elata -- A. monstrosa -- A. pauciflora.
- HONDURAS: A. elata [Santa Bárbara, Cortés, Yoro, & Atlántida] -- A. monstrosa [Cortés, Yoro, & Atlántida].
- SALVADOR: A. laxicipulis [Ahuachapán, Cuscatlan, & San Vicente] -- A. martinicensis var. oligoneura [La Paz].
- NICARAGUA: A. laxicipulis [Matagalpa] -- A. magnifica [Chinandega & Chontales] -- A. paniculata [Segovia].
- COSTA RICA: A. aculeifera [Alajuela, San José, & Cartago] -- A. anomala [Alajuela & Limón] -- A. costaricensis [Guanacaste & Funtarenas] -- A. Deppeana [Guanacaste & San José] -- A. elata [Puntarenas, Alajuela, Limón, & San José] -- A. falcata [Cartago] -- A. glandulifera [Alajuela] -- A. magnifica [Guanacaste & San José] -- A. odontophylla [Guanacaste & Heredia] -- A. panamensis [Alajuela, San José, & Cartago] -- A. Standleyi [San José] -- A. Valerii [Guanacaste].
- PANAMA: A. cephalophora [Canal Zone] -- A. costaricensis [Bocas del Toro] -- A. Deppeana [Chiriquí, Veraguas, & Canal Zone] -- A. elata [Panamá] -- A. falcata [Bocas del Toro] -- A. filipes [Panamá] -- A. glandulifera [Canal Zone] -- A. laeta [Taboga Island] -- A. magnifica [Panamá] -- A.

martinicensis [Bocas del Toro] -- A. mollis [Canal Zone] -- A. panamensis [Bocas del Toro, Canal Zone, Colon, & Panamá] -- A. paniculata [Bocas del Toro, Canal Zone, & Panamá] -- A. pendula [Canal Zone].

COLOMBIA: A. aculeifera [El Cauca] -- A. bogotensis [Santander Norte, Tolima, Cundinamarca, El Cauca, & Nariño] -- A. caucensis [Caldas] -- A. Deppeana [Magdalena, Bolívar, & Cundinamarca] -- A. elata [Magdalena, Bolívar, El Valle, & Cundinamarca] -- A. filipes [Magdalena] -- A. glandulifera [Antioquia, Santander Sur, Chocó, & Tolima] -- A. glandulifera var. pyramidata [Méta] -- A. Goudotiana [Cundinamarca] -- A. grandis [Tolima & Cundinamarca] -- A. guianensis [Cundinamarca & Méta] -- A. hirsutissima [Bolívar] -- A. integrifolia [Magdalena, Boyacá, Méta, & El Cauca] -- A. Killipii [Santander Norte] -- A. laeta [Magdalena, Santander Sur, & Caldas] -- A. laevis [Antioquia] -- A. Lehmannii [Boyacá, Chocó, & El Cauca] -- A. longifolia [Santander Sur] -- A. martinicensis [Antioquia & Méta] -- A. membranacea [Chocó & Méta] -- A. mollis [Magdalena, Atlántico, Bolívar, El Valle, Tolima, Cundinamarca, & El Cauca] -- A. mollis var. intermedia [Magdalena & Bolívar] -- A. montana [Huila] -- A. novogranatensis [Antioquia & El Cauca] -- A. paniculata [Santander Sur] -- A. Perrellii [Tolima] -- A. puberulenta [Bolívar] -- A. quinduensis [Tolima & Cundinamarca] -- A. racemosa [El Valle] -- A. reticulata [Cundinamarca] -- A. sessiliflora [Antioquia] -- A. sylvatica [Santander Sur] -- A. ternifolia [Cundinamarca] -- A. truncata [Cundinamarca].

VENEZUELA: A. elata [Trujillo, Carabobo, & Aragua] -- A. Fendleri [Aragua] -- A. floribunda [Aragua] -- A. glandulifera var. pyramidata [Monagas] -- A. guianensis [Amazonas] -- A. hirsutissima [Miranda] -- A. integrifolia [Zulia & Amazonas] -- A. laeta [Zulia, Lará, & Anzoategui] -- A. laxiflora [Bolívar] -- A. Lewisiana [Federal District] -- A. macrophylla -- A. martinicensis [Zulia & Mérida] -- A. membranacea [Falcon] -- A. mollis [Lará, Carabobo, Aragua, Federal District, Miranda, Guarico, Sucre, Anzoategui, Monagas, Bolívar, & Amazonas] -- A. parviflora [Bolívar] -- A. pendula [Zulia] -- A. perplexa [Delta Amacuro] -- A. quinduensis [Carabobo & Federal District] -- A. racemosa [Zulia] -- A. ternifolia -- A. verrucosa [Aragua].

BRITISH GUIANA: A. bracteolosa -- A. elata -- A. Gleasonii -- A. guianensis -- A. integrifolia -- A. laevis -- A. laxiflora -- A. macrantha -- A. racemosa -- A. roraimensis -- A. villosa.

SURINAM: A. elata -- A. laevis -- A. membranacea -- A. racemosa.

FRENCH GUIANA: A. Deppeana -- A. elata -- A. glandulifera

var. pyramidata -- A. integrifolia -- A. laevis -- A. macrantha -- A. martinicensis -- A. membranacea -- A. racemosa -- A. villosa.

ECUADOR: A. alba [Guayas & Los Ríos] -- A. bogotensis [Carchi, Pichincha, & Los Ríos] -- A. chrysantha [Manabí & Guayas] -- A. ferruginea [Carchi, Imbabura, Pichincha, & Chimborazo] -- A. glandulifera [Napo-Pastaza] -- A. glomerata [Manabí] -- A. integrifolia [Napo-Pastaza] -- A. monticola [Pichincha & Chimborazo] -- A. Pavoniana [Guayas] -- A. pendula [Oriente] -- A. Rimbachii -- A. Schimpffii.

PERU: A. bracteolosa [Loreto] -- A. chrysantha [Loreto] -- A. cordata [Loreto] -- A. cordifolia [Amazonas & Huanuco] -- A. cuneata [Loreto] -- A. elegans [Loreto & Junín] -- A. filipes [Loreto] -- A. glabrata [Junín] -- A. glandulifera [Loreto] -- A. insignis [Ancachs] -- A. integrifolia [San Martín, Loreto, Huanuco, & Junín] -- A. longipetiolata [Loreto] -- A. membranacea [Loreto] -- A. Mortonii [Cuzco] -- A. multiflora [Huanuco & Puño] -- A. ovata [Junín] -- A. peruviana [San Martín & Loreto] -- A. pulcherrima [Junín] -- A. Smithii [San Martín, Loreto, & Junín] -- A. sordida [Loreto] -- A. sufflava [Loreto] -- A. sufflava var. Klugii [Loreto] -- A. triflora [Loreto] -- A. velutinosus [Cuzco] -- A. vitelliniflora [Loreto].

BRAZIL: A. australis [Santa Catharina] -- A. brachiata [Rio de Janeiro, Paraná, Santa Catharina, & Rio Grande do Sul] -- A. bracteolosa [Amazonas & Pará] -- A. brasiliensis [Rio de Janeiro] -- A. Candelabrum [Mato Grosso] -- A. capitata [São Paulo] -- A. casseliaeformis [São Paulo] -- A. chrysantha [Pernambuco & Bahia] -- A. conturbata [Maranhão] -- A. cordata [Acre Territory] -- A. coriacea -- A. crenata [Minas Geraes, São Paulo, & Paraná] -- A. cuneata [Acre Territory] -- A. dentata [São Paulo] -- A. elegans [Amazonas] -- A. filipes [Amazonas, Pará, & Acre Territory] -- A. fluminensis [Bahia, Rio de Janeiro, São Paulo, & Paraná] -- A. glandulifera [Amazonas & Pará] -- A. glandulifera var. paraënsis [Pará] -- A. glandulifera var. pyramidata [Pará] -- A. gloriosa [Bahia] -- A. Goeldiana [Pará] -- A. graveolens [Bahia, Rio de Janeiro, & São Paulo] -- A. guianensis [Pará] -- A. Hassleri [Paraná] -- A. Hoehnei [Amazonas] -- A. integrifolia [Amazonas, Pará, Bahia, Minas Geraes, Goyaz, Mato Grosso, Rio de Janeiro, & São Paulo] -- A. intermedia [Amazonas, Pará, & Maranhão] -- A. laevis [Bahia, Mato Grosso, & Rio de Janeiro] -- A. lanata [Goyaz] -- A. lanceolata [Pará, Minas Geraes, Espírito Santo, Rio de Janeiro, & São Paulo] -- A. Lhotzkiana [Ceará, Parahyba, Bahia, Minas Geraes, Goyaz, Espírito Santo, São Paulo, & Paraná] -- A. Luschnathi [Bahia, Minas Geraes, Rio de Janeiro, São Paulo, & Santa

- Catharina] -- A. macrantha [Pará] -- A. mediterranea [Rio de Janeiro & São Paulo] -- A. medullosa [Rio de Janeiro] -- A. novofriburgensis [Rio de Janeiro] -- A. obducta [Amazonas, Minas Geraes, Rio de Janeiro, São Paulo, Paraná, & Santa Catharina] -- A. paraguariensis [Minas Geraes, Goyaz, Mattogrosso, Rio de Janeiro, São Paulo, & Paraná] -- A. parviflora [Pará] -- A. pernambucensis [Pernambuco & Rio de Janeiro] -- A. racemosa [Amazonas, Pará, Pernambuco, Bahia, & Rio de Janeiro] -- A. Riedeliana [Bahia, Minas Geraes, Rio de Janeiro, São Paulo, Santa Catharina, & Rio Grande do Sul] -- A. salticola [Pará] -- A. scandens [Acre Territory] -- A. Sellowiana [Pará, Pernambuco, Bahia, Minas Geraes, Goyaz, Mattogrosso, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, & Rio Grande do Sul] -- A. splendens [Minas Geraes] -- A. Spruceana [Amazonas] -- A. Surfaceana [Amazonas & Pará] -- A. verticillata [Minas Geraes, Mattogrosso, Rio de Janeiro, São Paulo, & Paraná] -- A. villosissima [Mattogrosso] -- A. virgata [Rio de Janeiro] -- A. vitelliniflora [Pará, Rio Grande do Norte, Pernambuco, Bahia, Minas Geraes, Mattogrosso, Rio de Janeiro, São Paulo, & Rio Grande do Sul].
- BOLIVIA: A. boliviana [Santa Cruz] -- A. breviflora [El Beni] -- A. Buchtienii [La Paz] -- A. chrysantha [Santa Cruz] -- A. elata [Santa Cruz] -- A. elegans [La Paz] -- A. elongata [La Paz] -- A. filipes [El Beni] -- A. Herzogii [Santa Cruz] -- A. hirsuta [La Paz] -- A. integrifolia [El Beni, La Paz, & Santa Cruz] -- A. mollis [Santa Cruz] -- A. multiflora [El Beni & Cochabamba] -- A. ovata [La Paz] -- A. peruviana [El Beni] -- A. Sellowiana [El Beni, La Paz, & Santa Cruz] -- A. setiformis [La Paz] -- A. spicata [La Paz] -- A. vitelliniflora [Santa Cruz].
- PARAGUAY: A. brachiata -- A. Candelabrum -- A. Hassleri -- A. lanceolata -- A. paraguariensis -- A. platyphylla -- A. verticillata -- A. vitelliniflora.
- URUGUAY: A. Hassleri.
- ARGENTINA: A. Hassleri [Misiones & Corrientes].
- CULTIVATED: A. Deppeana [England] -- A. elata [Florida, Cuba, & Austria] -- A. integrifolia [Haiti] -- A. lanceolata [Brazil] -- A. Luschnathi [France] -- A. martinicensis [England, France, Netherlands, Belgium, Germany, & Ceylon] -- A. martinicensis var. oligoneura [British Guiana & Belgium] -- A. mediterranea [Cameroons] -- A. obducta [Brazil & France] -- A. obovata [British Guiana & England] -- A. Sellowiana [Brazil] -- A. vitelliniflora [Germany].

An alphabetized list of citations (additional to those published in Brittonia 1: 472--477. 1934), including corrections:

Ackermann s.n. [1831] (Sellowiana); Acuffa s.n. [Herb. Roig 4232] (elata); Aitken 1082 (racemosa); Alexander, D. W., s.n. [Trin. Bot. Gard. Herb. 5022] (perplexa); Alexander, R. C., s.n. [Jamaica, 1850] (foetida), s.n. [Moneague] (elata), s.n. [Pleasant Valley, Moneague, 10 Apr. 1850] (foetida), s.n. (elata); Allen, C., 416 (laeta); André K.1554 (mollis), K.1556 (mollis); Appun 1204 (roraimensis, type coll.); Archer 392 (sessiliflora, type coll.); Arechavaleta 43 (Hassleri), B (Hassleri), s.n. (Hassleri); Aublet s.n. [Cayenne] (villosa, type coll.), s.n. (integrifolia, type coll. of Manabea arborescens), s.n. (laevis, type coll.); Aviles 988 (cephalophora).

Badier 176 (martinicensis); Bailey & Bailey 575 (lanceolata), 662 (cephalophora); Baker, O. F., 204 (magnifica, type coll.); Balansa 2094 (lanceolata); Bang, M., 671 (integrifolia), 878a, in part (setiformis, type coll.), 878a, in part (spicata, type coll.), 1732 (setiformis, type coll. of densiflora); Barboza s.n. [1846] (Luschnathi), s.n. [1846] (vitelliniflora); Barclay 632 (glomerata), 2498 (laeta); Bartlett, H. H., 11,941 (monstrosa), 13,011 (monstrosa); Baudin s.n. (martinicensis); Bélanger 260 (martinicensis), 290 (martinicensis), 571 (martinicensis); Benoist 740 (membranacea), 786 (membranacea), 787 (membranacea), 1306 (villosa); Benzon 127 (martinicensis), 3713 (martinicensis); Bernoulli 748 (laxicipulis); Berro 1019 (Hassleri), 5087 (Hassleri); Bertero 35, in part (elata), 2046 (martinicensis), 2104 (elata), 2105 (plicata, type coll.), s.n. [S. D.; Herb. Monac. 1019] (elata), s.n. [Majo Jun. 1831] (plicata), s.n. (Deppeana, type coll. of Berteriana), s.n. (elata); Berthoud-Coulon 196 (laevis), 550 (racemosa); Beyrich s.n. (Luschnathi); Biolley 7409 (falcata); Blanchet 46 (Lhotzkiana), 79 (Lhotzkiana), 163 (vitelliniflora), 231 (graveolens), 354 (Lhotzkiana), 682 (fluminensis), 729 (Lhotzkiana), 862 (laevis), 904 (vitelliniflora), 1064 (Lhotzkiana), 1294 (vitelliniflora), 1398 (gloriosa, type coll.), 1600 (laevis), 1603 (fluminensis), 1998 (gloriosa), 2064 (Lhotzkiana), 3397 (Lhotzkiana), 3451 (graveolens), s.n. [1834] (fluminensis), s.n. [1857] (Lhotzkiana), s.n. (Lhotzkiana), s.n. (racemosa), s.n. (Sellowiana); Boldingh 189 (martinicensis), 246 (martinicensis), 386a (martinicensis), 410 (martinicensis), 894 (martinicensis); Bonpland 755 (Hassleri), 956 (integrifolia), 983 (mollis, type coll. of salutaris), 1664 (laeta, type coll.), 5864 (quinduensis), s.n. (mollis); Boog s.n. (mediterranea); Bowie & Cunningham 336 (vitelliniflora), 496 (vitelliniflora), s.n. [Road to Sta. Amaro, near Sta. Paulo] (obducta), s.n. (obducta); Brade 7464 (Sellowiana), 10,542 (obducta); Brenes 105 (panamensis), 105a (panamensis), 110 (panamensis), 180 (panamensis), 301 (aculeifera), 3574 (panamensis), 4030 (panamensis),

4320 (panamensis), 4345b (panamensis), 4395 (panamensis), 5709 (aculeifera), 6193 (elata), 6652 (anomala), 14,313 (panamensis), 15,661 (anomala), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 14,484] (glandulifera); British Guiana Bot. Gard. s.n. [May, 1905] (obovata); Britton & Cowell 594 (martinicensis); Britton & Harris 10,726 (elata); Broadway, W. E., 142 (martinicensis), 1410 (martinicensis), 2584 (obovata), 2973 (obovata), 3157 (obovata), 3334 (elata), 4243 (perplexa), 6349 (obovata), 6396 (obovata), 9064 (obovata), 9128 (obovata), s.n. [Mount Parnassus, June, 1906] (martinicensis), s.n. [Oct. 31, 1905; Hort. Thenensis I.4507] (martinicensis), s.n. [Year 1906?] (martinicensis), s.n. [Manzanilla, Aug. 1918] (integrifolia), s.n. [Trin. Bot. Gard. Herb. 7164] (integrifolia); Broadway, Mrs. W. E., s.n. [St. Ann's] (laxiflora, type coll. of trinitensis); Browne, P., s.n. [Herb. Linnaeus G.810, S.8] (elata, type coll. of Knoxia 2); "B. S." s.n. (martinicensis); Buchtien 1645 (elongata, type coll.), 1715 (hirsuta, type coll.), 1717 (Buchtienii, type coll.), 2992 (multiflora), s.n. [XI.1910] (multiflora); Bunbury 297 (obducta), 463 (obducta); Burchell 9 (pernambucensis), 1985 (Riedeliana), 2581 (integrifolia), 3418, in part (integrifolia), 3418, in part (Sellowiana), 3547 (capitata, type coll.), 4105 (verticillata), 4604 (Sellowiana), 8345 (paraguariensis), 9645 (lanceolata); Buswell s.n. [Gov't. Grounds, July 22, 1934] (elata).

Caley s.n. [Jan. 1823] (martinicensis); Campos Novaes 933 (verticillata); Cardenas 16, special (breviflora, type coll.); Carleton 422 (monstrosa, type coll.); Carvalho s.n. [Herb. Inst. Biol. 748] (paraguariensis); Casaretto 926 (obducta), 2022 (Lhotzkiana), 2624 (verticillata); Castelnau s.n. [Rio Ucayali] (integrifolia); Chaffanjon 245 (mollis); Chamberlain s.n. [25 Juli 1817; Herb. Monac. 1023] (fluminensis); Chrysler 1636 (elata); Clausen 8 (obducta), 53, in part (Luschnathi), 134 (novofriburgensis, type coll.), 352 (Lhotzkiana), 630 (lanceolata), 652 (obducta), s.n. [Curvelo] (Lhotzkiana), s.n. [Aug.--April, 1840] (Lhotzkiana), s.n. [Aug.--April, 1840] (obducta), s.n. [Aug.--April, 1840] (Sellowiana), s.n. [Aug.--April, 1840] (verticillata), s.n. (Lhotzkiana), s.n. (vitelliniflora); Collector indig. Suriname 82 (laevis), 87 (racemosa); Collector undesignated 23 (obducta), 285 (fluminensis), 354 (villosa), 359 (villosa), 404 (paraguariensis), 426 (martinicensis), 3653 (Sellowiana), s.n. [Hb. Portenschlag] (elata), s.n. [Cayenne] (laevis), s.n. [Aug. 1824] (martinicensis), s.n. ["Bois de Calme"] (nervosa), s.n. [H. B. 30] (vitelliniflora), s.n. (fluminensis), s.n. (integrifolia), s.n. (laevis), s.n. (martinicensis), s.n. (racemosa); Cook & Collins 291 (martinicensis); Cook & Gilbert 1234 (Mortoni, type coll.), 1382 (velutinoso, type coll.); Cooper, G. P., 60 (martinicensis), 80 (martinicensis).

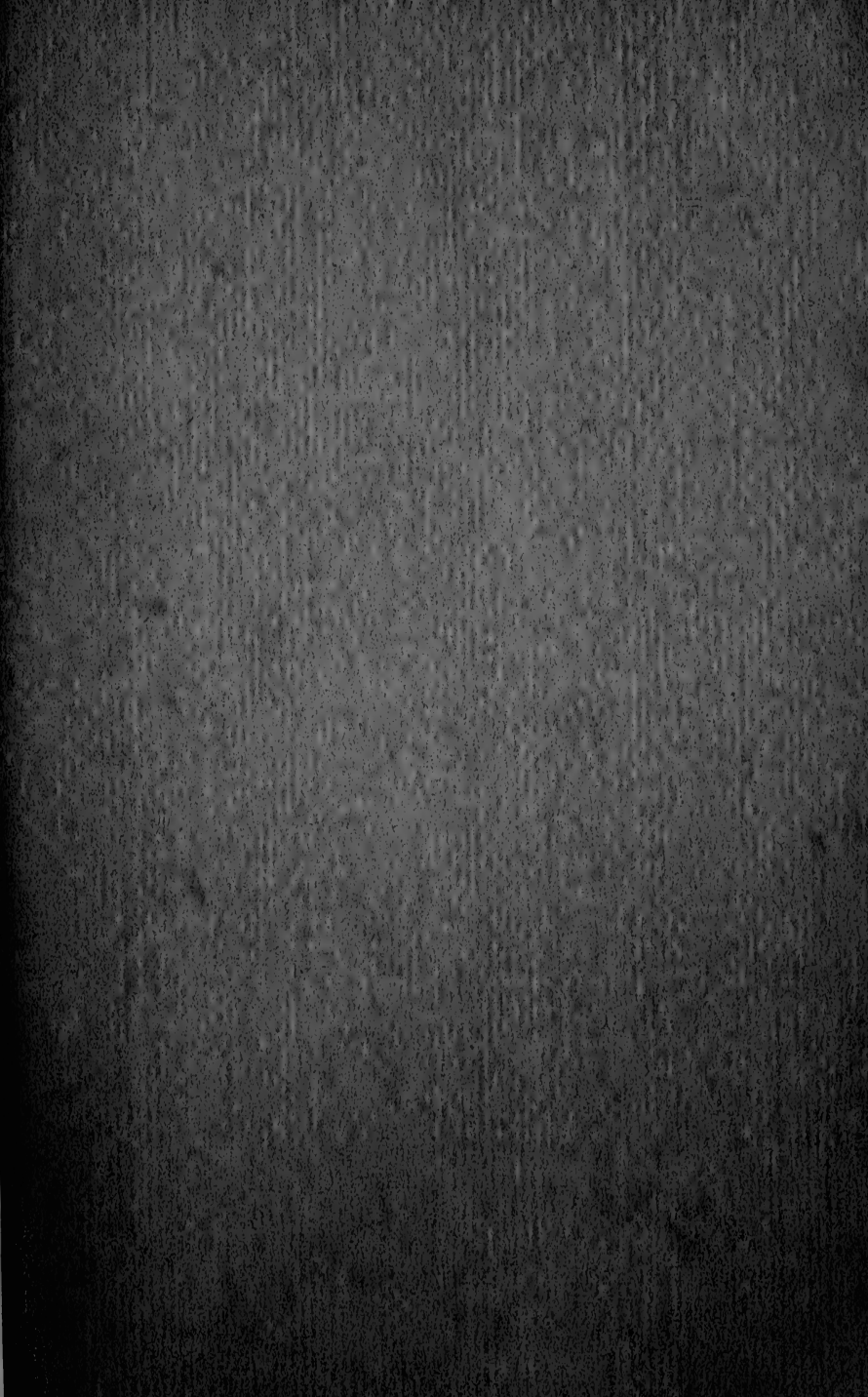
sis), 167 (martinicensis); Crüger s.n. [17 Aug. '46] (integrifolia), s.n. (laxiflora); Cult. Hort. Berol. s.n. [Jun. 1831] (vitelliniflora); Cult. Hort. Schönbr. s.n. (elata); Cult. Palm Stove Kew s.n. (martinicensis).

Dahlgren & Sella 524 (racemosa); Damazio 1786 (obducta), 1926 (Sellowiana); Dancer s.n. (elata); Dannouse s.n. (laxiflora); Dawe 192 (bogotensis), 472 (glandulifera, type coll.); De la Ossa s.n. [1825] (martinicensis); Department of Forestry 2850 (racemosa); Desclussaux s.n. [Herb. Jussieu 5035a] (elata); Desportes s.n. [Herb. Jussieu 5035b & 5041] (elata); Diels 942 (glandulifera); Distin s.n. (foetida); Dombey 251 (multiflora), s.n. [Páson Huara-huari] (multiflora), s.n. (integrifolia); Don, G., s.n. (elata); D'Orbigny 1086 (mollis), 1094 (Sellowiana); Drake s.n. (racemosa); Duchassaing s.n. [Panama] (panamensis); Ducke 136 (intermedia), 444 (bracteolosa), 544 (intermedia), 6739 (integrifolia), 7351 (bracteolosa), s.n. [Herb. Rio de Janeiro 18,949] (macrantha, type coll.); Dugand 101 (mollis), 469 (mollis), 639 (mollis); Dugand & Mina 950 (Deppeana); Dusén 9382 (Hasleri), 10,541 (crenata, type coll.), s.n. [May 5, 1911?] (crenata), s.n. [Jaguariahyva, May 1914] (verticillata); Duss 303 (martinicensis), 2389, in part (martinicensis).

Edwall s.n. [Herv. Geogr. e Geol. 4362; Herb. Inst. Biol. 15,614] (dentata, type coll.); Eggers 501, in part (martinicensis), 5184b (elata), 6617, in part (martinicensis), 6617, in part (martinicensis var. oligoneura), 7153 (martinicensis), s.n. [Balao, 31/12/1891] (alba), s.n. [Decbr. 1882] (martinicensis); Ekman H.8971 (nervosa, type coll. of subopposita), H.12,310 (elata), H.13,279 (elata); Elias 617 (puberulenta, type coll.), 1102 (mollis); Estebom 7 (laevis).

Fawcitt s.n. [May, 1888] (elata); Fendler 571 (perplexa), 592 (perplexa), 841 (verrucosa), 844 (Lewisiana, type coll.), 845 (floribunda, type coll.), 2032 (Fendleri, type coll.); Fiebrig 5201 (Candelabrum), 5631 (paraguariensis), 6241 (lanceolata, type coll.); Finlay s.n. [Trin. Bot. Gard. Herb. 2386] (obovata), s.n. [Trin. Bot. Gard. Herb. 2389] (obovata, type coll. of dubia), s.n. [Trin. Bot. Gard. Herb. 2391] (laxiflora); Fleischmann 520 (integrifolia); Focke 396 (elata); Forsström s.n. (martinicensis); Forster s.n. ["India"] (martinicensis); Forsyth s.n. (martinicensis); Fox 463 (obducta); Frambach 123 (Sellowiana); Freyreiss s.n. (coriacea, type coll.), s.n. (Luschnathi); Funck & Schlim 81 (martinicensis).

Gabriel s.n. [1802] (laevis); Galeotti 1268 (Deppeana), 7238 (elata); Gardner, G., 100 (mediterranea, type coll. of cestrifolia), 3401 (paraguariensis), 5830 (obducta, type coll. of lanuginosa), s.n. [1838] (vitelliniflora); Gaudichaud 60 (vitelliniflora), 110 (Luschnathi), 265 (obducta), 468, in part (fluminensis), 468, in part (Luschnathi).



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. 1

January, 1939

No. 9

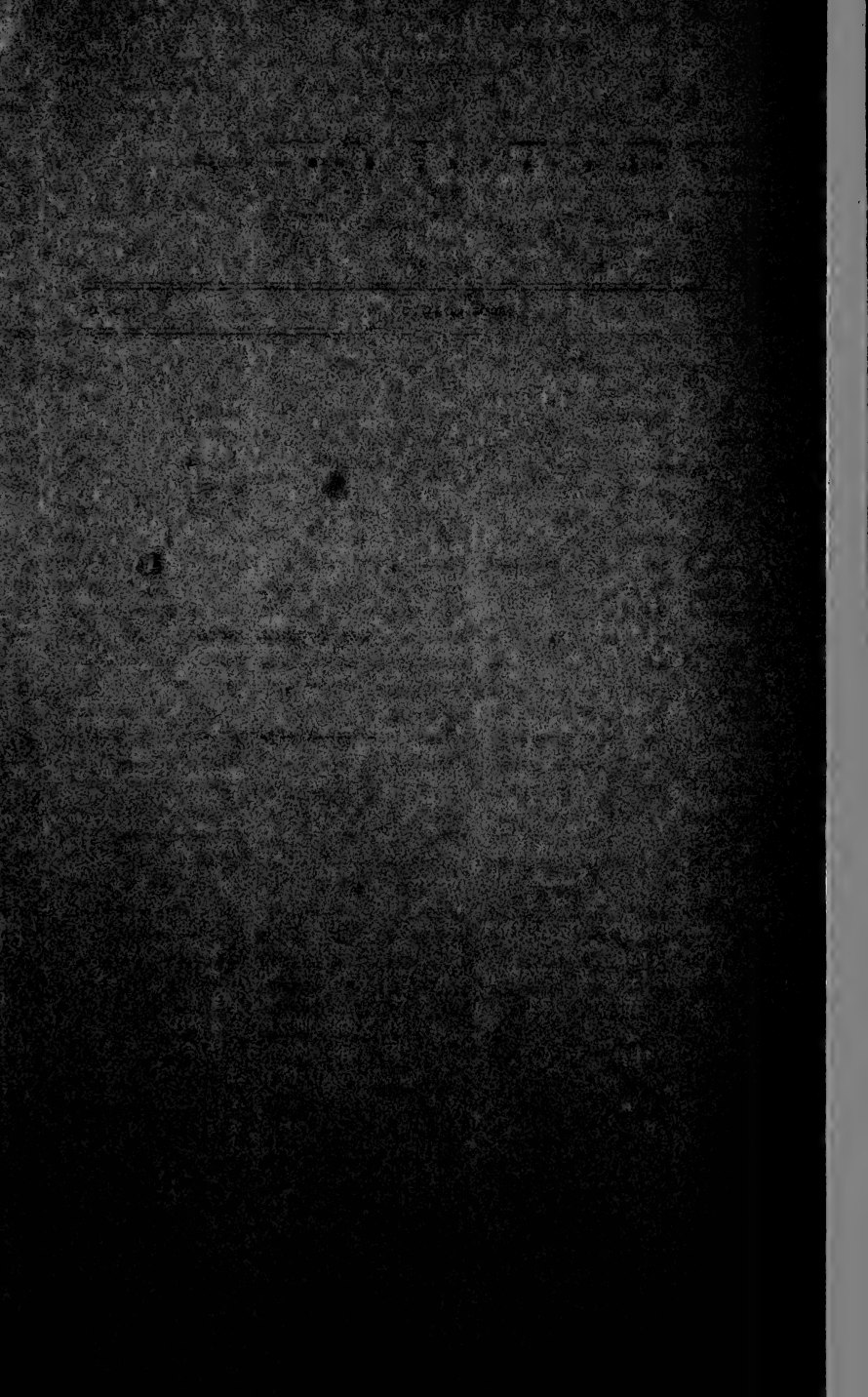
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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance.

Vol. 1, number 2, was issued May 17, 1938



SIX NEW TREES AND SHRUBS FROM TROPICAL NORTH AMERICA (a)

C. L. Lundell

MAYTENUS GUATEMALENSIS Lundell, sp. nov.

Frutex 1.3-metralis, 3 cm. diam. Folia subcoriacea, oblongo-elliptica vel elliptica, 3.8--7 cm. longa, 1.4--3 cm. lata, apice acuminata, acumine obtusiusculo, basi late cuneata, obscure et minute crenulato-serrulata, nervis lateralibus utrinque 7--9; petiolo 1.5--3 mm. longo. Inflorescentiae fasciculatae, axillares; pedicellis ca. 5 mm. longis. Capsula monosperma, obovoidea, ca. 11 mm. longa.

A glabrous shrub, 1.3 m. high, about 3 cm. in diameter; branchlets slender, wiry, angled. Leaves subcoriaceous, oblong-elliptic or elliptic, 3.8 to 7 cm. long, 1.4 to 3 cm. wide, apex abruptly acuminate, the acumen obtusish, base broadly cuneate, obscurely and minutely crenulate-serrulate, costa slightly elevated on both surfaces, main lateral veins 7 to 9 on each side, visible but faint on both surfaces; petioles canaliculate, 1.5 to 3 mm. long. Infructescence fasciculate in the axils; pedicels about 5 mm. long, sometimes solitary (?). Persistent calyx 5-dentate, the teeth broadly deltoid, about 0.5 mm. long, about 1.3 mm. wide. Capsules obovoid, about 11 mm. long, 2-celled with 2 erect ovules in each cell, 1-seeded.

Type in the Herbarium of the University of Michigan, W. A. S Hipp S-635, collected in swampy forest shade, at Camp 35, British Honduras - Guatemala boundary survey, Toledo district, at alt. of about 750 m., June 10, 1934.

MAYTENUS SCHIPP II Lundell, sp. nov.

Arbor 8--10-metralis, 13--23 cm. diam. Folia subcoriacea, obovato-elliptica vel elliptica, 5--11.5 cm. longa, 2.3--5.4 cm. lata, apice abrupte acuminata, acumine obtuso, basi late cuneata, crenulato-serrulata, nervis lateralibus utrinque 7--11; petiolo 6--9 mm. longo. Infructescenciae fasciculatae, axillares; pedicellis 4--6 mm. longis. Capsula obovoidea, 9--12 mm. longa. Semina 1--3; cotyledonibus suborbicularibus, ca. 7 mm. longis, basi biappendiculatis; radícula parva, ca. 0.5 mm. longa.

A glabrous tree 8 to 10 m. high, 13 to 23 cm. in diam., with cream-colored wood (S Hipp); branchlets slender, wiry, slightly angled. Leaves thinly subcoriaceous, obovate-elliptic or elliptic, 5 to 11.5 cm. long, 2.3 to 5.4 cm. wide, apex abruptly acuminate, the acumen obtuse, base broadly cuneate, finely crenulate-serrulate, sometimes very obscurely so, costa elevated on both surfaces, main lateral veins 7 to

11 on each side, finely prominulous on both surfaces, veinlets openly reticulate; petioles canaliculate, 6 to 9 mm. long. Infructescence fasciculate in the axils; pedicels 4 to 6 mm. long. Persistent calyx 5-dentate. Capsules bright orange (Schipp), obovoid, 9 to 12 mm. long, 2-celled, with 2 erect ovules in each cell, 1- to 3-seeded, aril red. Endosperm of seed abundant; cotyledons thin, equal, suborbicular, inequilateral, about 7 mm. long, bearing a minute appendage at base on each side; radicle small, about 0.5 mm. long.

Type in the Herbarium of the University of Michigan, W. A. Schipp 1014, collected in shade in swampy places, at "Dixie", Punta Gorda, Toledo District, British Honduras, alt. about 65 m., Sept. 26, 1932.

Additional specimens examined: BRITISH HONDURAS: Toledo District, Rio Grande, alt. 15 m., in swamp forest or on river banks, Schipp 1224, Nov. 18, 1933.

M. Schippii is closely related to M. guatemalensis Lundell, but differs in being a tree with larger, usually obovate-elliptic rather than oblong-elliptic leaves, and with petioles more than twice as long.

MAYTENUS TEXANA Lundell, sp. nov.

Frutex. Ramuli minute puberuli. Folia crassa, pallida, oblongo-elliptica vel obovato-elliptica, 1.6--3.1 cm. longa, 9--18 mm. lata, apice late obtusa vel rotundata, minute apiculata, basi rotundata, subintegra, enervia, costa basi prominula; petiolo crasso, 1--3 mm. longo, parce et minute puberulo. Flores dioeci, fasciculati. Pedicelli 2 mm. longi vel minores. Calyx quinquefidus, lobis rotundatis, ca. 0.65 mm. longis. Petala 5, ovata, 1.2--1.5 mm. longa, lineati-punctata. Ovarium 3- raro 4-loculare. Ovulum in loculis solitarium. Capsula obovoidea, ca. 12 mm. longa. Semina 1--3, arillata.

A shrub, much-branched; branchlets usually short, rather thick, very minutely puberulent. Leaves thick, very pale, ashy gray when dry, oblong-elliptic or obovate-elliptic, 1.6 to 3.1 cm. long, 9 to 18 mm. wide, apex broadly obtuse or rounded, usually minutely apiculate, base rounded, entire below, subentire above, usually with 2 or 3 minute teeth on each side, venation obscure, costa prominulous at base only; petioles stout, 1 to 3 mm. long, sparsely and minutely puberulent. Flowers dioecious, fasciculate in the leaf axils; pedicels less than 2 mm. long. Staminate flowers: Calyx 5-lobed, the lobes rounded, about 0.65 mm. long, very minutely erose-ciliolate, punctate. Petals 5, ovate, 1.3 to 1.5 mm. long, erose at apex, lineate-punctate. Filaments subulate, about 0.6 mm. long. Anthers broadly cordate, rufous punctate dorsally. Pistillate flowers: Petals smaller, about

1.2 mm. long, rufous-punctate. Stamens rudimentary. Disk large, flat. Ovary usually 3-celled, sometimes 4-celled, with one erect basal ovule in each cell. Capsules obovoid, about 12 mm. long, 3- or 4-celled, 1- to 3-seeded; aril red; seed lineate, oblong-obovoid, about 5 mm. long; endosperm present; cotyledons oblong-elliptic, about 2.8 mm. long, rounded at apex and base, flat; radicle about 0.8 mm. long, acutish.

Type in the Herbarium of the University of Michigan, Elzada U. Clover 986, collected in mesquite woods, between Los Fresnos and Fort Isabel, Cameron Co., Texas, April 22, 1933.

Additional specimens examined: TEXAS: Cameron Co., Los Fresnos, in heavy brush, Clover 1731, Feb. 8, 1934; common in the lower Rio Grande valley.

The oblong-elliptic or obovate-elliptic, short-petiolate leaves rounded at the base, and the smaller rufous-punctate flowers distinguish M. texana from M. phyllanthoides Benth., its closest relative. In the latter, the leaves are obovate, cuneate at the base, larger, and have much longer petioles.

EUGENIA TOLEDINENSIS Lundell, sp. nov.

Arbor 15 m. alta, 30 cm. diam.; ramulis ut videtur novellis rufo-tomentosis, demum glabratiss. Folia 5--6 mm. longe petiolata, subcoriacea, adulta glabra, oblonga, 9.5--12.5 cm. longa, 2.8--4.1 cm. lata, apice obtuse acuminata, basi acuta. Pedunculi et pedicelli rufo-tomentosi, crassi, 2--5 mm. longi, axillares. Fructus globosus, ca. 2 cm. diam., rufo-tomentosus.

A tree 15 m. high, 30 cm. in diam.; branchlets rather slender, apparently rufous-tomentose at first, glabrous with age. Leaves thin, subcoriaceous. Petioles stout, terete, 5 to 6 mm. long. Leaf-blades narrowly oblong, 9.5 to 12.5 cm. long, 2.8 to 4.1 cm. wide, apex obtusely acuminate, base acute, glabrescent with age, costa slightly raised above, prominent beneath, reticulate-veined on both surfaces, main lateral veins 12 to 15 on each side, widely ascending, nearly horizontal to midrib, anastomosing into submarginal veins, conspicuous on both surfaces. Pedicels solitary or several in a short raceme, axillary, the peduncles and pedicels stout, 2 to 5 mm. long, rufous-tomentose. Fruits globose, about 2 cm. in diam., rufous-tomentose, crowned by persistent rufous-tomentose calyx-lobes.

Type in the Herbarium of the University of Michigan, W. A. Schipp S-644, collected on creek bank in forest shade at Camp 23, British Honduras - Guatemala boundary survey, Toledo District, British Honduras, at alt. of about 600 m., Feb. 16, 1934.

Eugenia toledinensis apparently is related to E. xalapen-

sis (HBK.) DC.

EUGENIA VACANA Lundell, sp. nov.

Arbor 5 cm. diam.; ramulis novellis rufo-tomentosis, demum glabris. Folia subcoriacea, anguste elliptico-oblonga, 2.5--4.5 cm. longa, 1--1.7 cm. lata, apice obtuse acuminata, basi cuneata, juventute parce rufo-tomentosa, maturitate glabra; petiolis 2--3.5 mm. longis. Flores breviter racemosi, ut videtur fasciculati. Pedicelli graciles, 4--8 mm. longi, parce rufo-tomentosi. Calycis lobi inaequales, ovati, 1--1.5 mm. longi. Petala orbicularia, 2.8--3.4 mm. longa, ciliata.

A tree; diam. 5 cm.; branchlets slender, reddish, at first loosely rufous-tomentose, puberulent or glabrescent with age; internodes 1 to 1.8 cm. long. Leaves subcoriaceous, narrowly elliptic-oblong, 2.5 to 4.5 cm. long, 1 to 1.7 cm. wide, apex acuminate, the acumen obtuse, base cuneate, loosely rufous-tomentose on both surfaces at first, glabrescent early, costa impressed above, prominent beneath, the veins obsolete above, faint beneath; petioles canaliculate, 2 to 3.5 mm. long. Flowers white, very shortly racemose, appearing fasciculate. Pedicels slender, 4 to 8 mm. long, loosely rufous-tomentose. Calyx pubescent, 4-lobed, the lobes ciliate, ovate, unequal, 1 to 1.5 mm. long, rounded or broadly obtuse. Petals 4, orbicular, 2.8 to 3.4 mm. long, ciliate.

Type in the Herbarium of the University of Michigan, Percy H. Gentle 2535, collected on hillside opposite Vaca, El Cayo District, British Honduras, April 30, 1938; vernacular name "walk naked".

Of the species in the Yucatan Peninsula, its closest ally appears to be *E. bumelioides* Standl., which has ovate or elliptic broader leaves with denser darker tomentum. The local name, alluding to the smooth brownish or reddish trunk, is applied to several other British Honduras eugenias.

OSMANTHUS MEXICANA Lundell, sp. nov.

Arbor 6--7 m. alta, 25 cm. diam. Folia glabra, coriacea, anguste lanceolata vel oblanceolata, 4--9 cm. longa, 1--2.4 cm. lata, apice caudato-acuminata, acumine anguste obtusiusculo, basi acuminata, nigripunctata, costa supra impressa; petiolo gracili, 1--1.8 cm. longo. Inflorescentiae axillares, anguste paniculatae, 1.5--3 cm. longae. Calycis lobi 4. Corolla puberulenta, ca. 4 mm. longa, ad mediam partem coalita, lobis late ovatis vel suborbicularibus, rotundatis. Ovarium glabrum, biloculare. Fructus ellipsoideus, ca. 13 mm. longus, 8 mm. diam.

A tree 6 to 7 m. high, and 25 cm. in diam.; branchlets erect, glabrous, slender, with short internodes. Leaves opposite, coriaceous, glabrous, narrowly lanceolate or oblanceo-

late, 4 to 9 cm. long, 1 to 2.4 cm. wide, apex caudate-acuminate, the acumen narrowly obtusish, base acuminate, decurrent on the petiole, densely black-punctate, costa slightly impressed above, prominent beneath, main lateral veins 4 to 6 on each side, nearly obsolete; petioles slender, 1 to 1.8 cm. long. Panicles of pistillate flowers axillary, narrow, small, 1.5 to 3 cm. long, each node bibracteate, sparsely and minutely puberulent, glabrescent. Flowers sessile or subsessile, the pedicels less than 1 mm. long. Calyx small, 4-lobed, the lobes triangular, about 0.6 mm. long, puberulent above, ciliolate. Corolla puberulent, densely so above, about 4 mm. long, 4-lobed to the middle, the lobes broadly ovate or suborbicular, rounded. Staminodes 2. Ovary glabrous, 2-celled, with 2 ovules in each cell. Style stout, about 1.5 mm. long. Stigma capitate, large. Fruits ellipsoid, about 13 mm. long, 8 mm. in diam.

Type in the Herbarium of the University of Michigan, Eizi Matuda 2023, collected on Cerro Laguna, Mapastepec, Chiapas, Mexico, Jan. 1938.

By its small narrow caudate-acuminate leaves, blackened when dry, costa impressed above, and large stigma, O. mexicana may be readily distinguished from the two other American species.

(a) Papers from the Herbarium of the University of Michigan.

ADDITIONAL NOTES ON THE ERIOCAULACEAE -- I

Harold N. Moldenke

On December 1, 1937, I published a discussion of the Eriocaulaceae of North America in North American Flora 19: 17--50. The editorial policy of this flora, however, is such that one is in many cases not permitted to give complete synonymy, complete lists of published illustrations in the case of abundantly illustrated species, or any lists of examined material. Of these the most serious omission is that of the citation of herbarium material examined, for only by a consultation of such a list of cited material can future workers retrace the steps of a monographer and see actually on what he based his concept of any given genus, species, or variety. Lists of examined material are also invaluable in showing exactly what is known of the geo-

graphic distribution of any form, where gaps occur which might be filled in by more intensive collecting, what the basis is for the limits given, and in what herbaria critical specimens are deposited and where they can be studied for verification. To make up for these omissions the following notes are presented as a permanent record of the material examined in the preparation of the above-mentioned work. Additional material examined since its publication is also included here, together with the description of several newly discovered species and other miscellaneous notes.

It should be noted that throughout the work in North American Flora the number of peduncles given in specific or varietal descriptions applies in each case to one individual plant only. This is worth emphasizing, for in many cases herbarium material has been mounted in such a way that several or many distinct plants are crowded so close together in one mass that the casual observer might be led to suppose that only one plant is represented and that the total number of peduncles per plant is actually much larger than the number given in the description. The phrase "per plant" was originally included in all descriptions to emphasize this necessity on the part of the observer to determine how many plants he is actually looking at on a given specimen, but was omitted by the editors to conserve space. It may also be mentioned, in passing, that the citation of literature references in this work is considerably at variance with that adopted in all my other publications; again, in order to comply with the established policies of North American Flora. In the present supplementary notes my own system, established in some 75 previous publications, is maintained.

In the citation of specimens on the following pages, the following abbreviations of the names of herbaria are employed: Bc = Barnard College, New York City; C = Columbia University, New York City; De = Delzie Demaree Herbarium, Monticello, Arkansas; Es = Estacion Experimental Agronomica, Havana; F = Field Museum of Natural History, Chicago; Go = Botaniska Trädgård, Göteborg; I = Langlois Herbarium, Catholic University of America, Washington; It = Cornell University, Ithaca, N. Y.; K = Royal Botanic Gardens, Kew; Ki = E. P. Killip Herbarium, Washington; M = Meisner Herbarium, New York Botanical Garden; Mi = University of Michigan, Ann Arbor, Mich.; N = Britton Herbarium, New York Botanical Garden, New York City; P = Muséum National d'Histoire Naturelle, Paris; Q = Jardin Botánico, Madrid; T = Torrey Herbarium, New York Botanical Garden; Tc = Torrey Botanical Club Herbarium, New York Botanical Garden; and Z = H. N. Moldenke Herbarium, Watchung, New Jersey. To the directors and curators of these 18 herbaria the author extends his sincere thanks for their kindness and cooperation in permitting him

to study their material of this group. All material so studied -- 920 specimens and mounted photographs -- is herein cited.

ERIOCAULON L. Sp. Pl., ed. 1, 87. 1753; Gen. Pl., ed. 5, 38. 1754.

Cespa Hill, Herb. Brit. 1: pl. 66 [some copies]. 1769; Nasmythia Huds. Fl. Ang., ed. 2, 414. 1778; Randallia Petiv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47, pl. 5, f. 2. 1828; Symphachne P. Beauv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47, pl. 5, f. 3. 1828; Sphaerochloa P. Beauv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47. 1828 ["Sphaerochloa", op. cit. pl. 5, f. 1. 1828]; Leucocephala Roxb. Fl. Ind. 3: 612. 1832; Electrosperma F. Muell., Trans. Phil. Soc. Victor. 1: 23. 1855; Dichrolepis Welw. Apont. Phyt.-geogr. 542. 1859; Lasirolepis Böck., Flora 56: 90. 1873.

A genus of about 360 species, widely distributed in marshy places in tropical and subtropical regions, the greatest number in tropical America; numerous also in tropical Asia and Africa; one species in northwestern Europe and northeastern North America.

Excluded species: Eriocaulon leptodictyon A. Gray is cited by Durand & Jackson, Ind. Kew. Suppl. 1: 158 (1902) to "S. Wats. in Proc. Am. Acad. 22 (1887) 420.--Mexic.", but this Watson reference plainly describes Eupatorium (not Eriocaulon!) leptodictyon.

3. ERIOCAULON ARENICOLA Britton & Small ex Britton, Bull. Torrey Club 44: 31. 1917.

This species inhabits white sand and has been collected in anthesis in February.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wilson 14,179 (N--type).

31. ERIOCAULON BENTHAMII Kunth, Enum. Pl. 3: 545. 1841.

Eriocaulon Bentharii Kunth ex Ruhl. in Engl. Pflanzenreich 4³⁰: 48, sphalm. 1903.

The Herb. Hooker specimen of Hartweg 258 at Kew is inscribed "Zacatecas", but the other two specimens of this number are inscribed "Lagos" (in Jalisco). The species inhabits swamps and marshes, often growing directly in the water, and has been collected in anthesis in March and from June to August.

Citations: MEXICO: Chihuahua: E. W. Nelson 6028 (N--2); Jalisco: Hartweg 258 (K--2 isotypes, N--isotype); Mexico: Hinton 627 (K), 3488 (K), 3638 (K, N), 4549 (K, N).

1. ERIOCAULON BILOBATUM Morong, Bull. Torrey Club 19: 226. 1892.

Eriocaulon Jaliscoanum S. Wats., Proc. Amer. Acad. 26: 157, in part (1891) is often cited as a synonym of this species, but Watson's name more properly is synonymous with E. Schiedeianum. E. bilobatum inhabits wet hollows and wet places in rocky slopes, ascending to 5000 feet, and has been collected in anthesis in October.

Citations: MEXICO: Jalisco: Pringle 3855 (C--type), 6299 (C).

7. ERIOCAULON COMPRESSUM Lam. Encycl. Méth. 3: 276. 1789.

Eriocaulon decangulare Walt. Fl. Car. 83. 1788 [not E. decangulare L., 1753]; Eriocaulon gnaphalodes Michx. Fl. Bor. Am. 2: 165. 1803; Eriocaulon cephalotes Michx. ex Poir. in Lam. Encycl. Méth. Suppl. 3: 161. 1813; Sphaerochloa compressa (Lam.) P. Beauv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47, pl. 5, f. 1. 1828 ["Sphaerochloa compressa Beauv." in N. Am. Fl. 19: 22. 1938]; ?Eriocaulon filiformis Raf. Atl. Journ. 121. 1832 [not E. filiformis Bong., Act. Petrop. Sci. Math. sér. 4, 1: 634. 1831].

The species inhabits moist sandy pinelands, cypress ponds and swamps, pine-barren swamps, bogs, flatwoods, millponds, swampy woods, moist pine-barrens, open or shaded muddy places, hammocks, sandhills, wet sandy soil, sandy low ground in woods, borders of ponds, everglades, and even the water of canals, and has been collected in anthesis from January to August.

Illustrations: Britton & Br. Ill. Fl., ed. 1, 1: f. 900. 1896; Ann. Rep. New Jersey State Mus. 1910: pl. 64, f. 2. 1912; Britton & Br. Ill. Fl., ed. 2, 1: f. 1142. 1913.

Citations: NEW JERSEY: Burlington Co.: Chrysler s.n. [13 July, 1930] (N), s.n. [Chatsworth, 3 June, 1931] (N); Commons s.n. [Atsion, June 22, 1882] (N); Eames s.n. [Chatsworth, VI.12.1894] (N); H. H. Rusby s.n. [Bass River, Aug. 1875] (M); Torrey & Cooper s.n. [Near Quaker Bridge] (N); Torrey Botanical Club s.n. [Forked River, May 29--June 2, 1896] (C); Ocean Co.: Kraemer s.n. [Tom's River, June 30, 1891] (C); MacElwee 658 (N); H. N. Moldenke 10,577 (N); Rich s.n. [Tom's River, May 30, 1887] (C); Camden Co.: Berlinger s.n. [Atco, June, 1895] (M); Atlantic Co.: Bassett s.n. [Hammonton] (I, N--2); Beals s.n. [Hammonton Lake, July 1, 1922] (N); Gross 3118 (N), s.n. (N); Cape May Co.: C. S. Williamson s.n. [Bennet, June 16, 1907] (N); County undetermined: T. F. Allen s.n. [Pine barrens, June, 1871] (C); Herb. Columbia University s.n. [Pine barrens] (C); Herb. Torrey s.n. [Pine barrens] (T). MARYLAND: Baltimore Co.: Morong s.n. [Cantonsville, Aug. 11, 1873] (Bc); Wilcomico Co.: A. V. Smith 325 (I), 333 (I), s.n. [May, 1936] (I). NORTH CAROLINA: Onslow Co.: House 5108 (N). SOUTH CAROLINA: Lexington Co.: Weatherby 6123 (N); Charleston Co.:

Gibbes s.n. [1st March, 1839] (N). GEORGIA: Sumter Co.: R. M. Harper 2219 (N); Bryan Co.: R. M. Harper 2170 (N); Charlton Co.: J. S. Harper 394 (N); County undetermined: A. Gray s.n. [1840] (M). FLORIDA: Duval Co.: Curtiss 3017 (Bc, I); Hogg 8 (C); Lighthipe 172 (N); Clay Co.: Canby s.n. [Hibernia, March, 1869] (T); St. Johns Co.: M. C. Reynolds s.n. [St. Augustine, 1877] (C); Levy Co.: O'Neill 732 (I); Lake Co.: Nash 92 (C, MI); Underwood 1928 (C); Orange Co.: Huger s.n. ["X.Q."] (N); E. J. Palmer 38, 325 (N); Pasco Co.: O'Neill 1947 (I), 7780 (I); Hillsboro Co.: Leavenworth s.n. [Tampa Bay] (T); Polk Co.: McFarlin 4491 (I); Topping 2611 (N); De Soto Co.: Small & Dewinkeler 9044a (N); Lee Co.: H. N. Moldenke 689a (N); Sheehan s.n. [Cat-tail Island, Feb. 26, 1919] (N); C. Skottsberg s.n. [Buckingham, 19.5.1935] (Go); J. P. Standley 15 (N); Broward Co.: Small, Carter, & Small 3361 (N); Seminole Co.: O'Neill 6512 (I); Dade Co.: O'Neill 7778 (I); J. K. Small 7386 (N); Small & Carter 2991 (N); Small, Carter, & Small 3264 (N); Collier Co.: O'Neill 7779 (I--2); County undetermined: Chapman s.n. [Florida] (T); Herb. Chapman s.n. [Florida] (C--2). ALABAMA: Mobile Co.: Gates, Fletcher, & Jewett 191 (MI); Herb. Univ. Michigan s.n. [Mobile, May 7, 1839] (MI); Escambia Co.: C. F. Baker 1557 (N). LOUISIANA: Calcasieu Par.: E. J. Palmer 7718 (N). UNITED STATES: State undetermined: Collector undesignated 272 (T); Walsh s.n. [Southern States] (T--2).

7a. ERIOCAULON COMPRESSUM var. HARPERI Moldenke, N. Am. Fl. 19: 23. 1937.

This variety inhabits dry or moist pine-barrens, low or dry sandy pinelands, sandhills, wet sandy ditches, swamps, and shallow ponds, and has been collected in anthesis from February to July.

Citations: GEORGIA: Sumter Co.: R. M. Harper 1395 (N); Charlton Co.: F. Harper 383 (N). FLORIDA: Jackson Co.: R. M. Harper 79 (N--type); Washington Co.: Small & Wherry 11,695 (N); Franklin Co.: Biltmore Herb. 2296a (N); Leon Co.: Kurz s.n. [May 16, 1926] (N); Wakulla Co.: H. N. Moldenke 1123 (N); De Soto Co.: Small & Dewinkeler 9044 (N); Lee Co.: H. N. Moldenke 689 (N). ALABAMA: Mobile Co.: Gates, Fletcher, & Jewett 189 (MI), 190 (MI), 192 (MI), s.n. [Mobile, May 15, 1839] (MI). MISSISSIPPI: Harrison Co.: C. F. Baker 1558 (N); Langlois s.n. [Pass Christian, March, 1880] (I); Tracy 5032 (MI, N). LOUISIANA: St. Tammany Par.: Langlois s.n. [Near Mandeville, 1.V.1893] (I).

2. ERIOCAULON CUBENSE Ruhl. in Fedde, Repert. 22: 29. 1925.

This species inhabits alkali flats and white sand, and has been collected in anthesis in November.

Citations: CUBA: Isla de Pinos: Ekman 12,065 (N-isotype).

4. ERIOCAULON DECANGULARE L. Sp. Pl., ed. 1, 87. 1753.

Eriocaulon statices Crantz, Inst. 1: 360. 1766; Eriocaulon serotinum Walt. Fl. Car. 83. 1788; Randalia decangulare (L.) P. Beauv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: 47, pl. 5, f. 2. 1828 [Randalia decangularis according to Index Kewensis, Ruhland, and North American Flora]; Symphachne xyrioides P. Beauv. ex Desv., Ann. Sci. Nat. Paris, sér. 1, 13: pl. 5, f. 3. 1828 [Symphachne xyrioides according to North American Flora]; Randalia americana Petiv. ex Ruhl. in Engl. Pflanzenreich 4³⁰: 33, in syn. 1903.

The species inhabits wet or moist meadows, argillaceous or siliceous boggy depressions, swamps, wet sandy soil, flatwoods, mountain bogs, savannas, wet or low pinelands, moist pine-barrens, pine-barren swamps and ponds, wet or boggy places, sandy bogs, moist ditches, cypress swamps, ponds, and pond-margins, ascending to 2500 feet, and has been collected in anthesis from May to January. Pennell 9075 has the heads binary on two very short stalks at the apex of the peduncle, while the Columbia University sheet of Herb. Chapman s.n. also has binary heads with many of the outer bractlets elongated into stiff leafy proliferations.

Illustrations: Ann. Sci. Nat. Paris, sér. 1, 13: pl. 5, f. 2 & 3. 1828; Lodd. Bot. Cab. 14: pl. 1310. 1828; Curtis, Bot. Mag. 59: pl. 3126. 1832; Britton & Br. Ill. Fl., ed. 1, 1: f. 901. 1896; Ann. N. Y. Acad. Sci. 17¹: pl. 24, f. 1. 1906; G. T. Stevens, Ill. Guide Fl. Fl. pl. 9, f. 5. 1910; Ann. Rep. New Jersey State Mus. 1910: pl. 28, f. 2. 1912; Britton & Br. Ill. Fl., ed. 2, 1: f. 1143. 1913.

Citations: NEW JERSEY: Monmouth Co.: D. C. Eaton s.n. [1860] (C); Burlington Co.: Chrysler s.n. [W. of Speedwell, 13 July, 1930] (N); Fogg 4602 (N), 4655 (N); Leggett s.n. [Quaker Bridge, July 8, 1864] (Tc); H. H. Rusby s.n. [Bass River, Aug. 1875] (Mi); Van Pelt s.n. [Chatsworth, Aug. 20, 1907] (N); Ocean Co.: N. L. Britton s.n. [Forked River, Aug. 17, 1889] (C); Clute 214 (N); Mackenzie 1050 (N), 1638 (N), 2361 (N), 3694 (N), 4257 (N), 4741 (N--2), 5482 (N); Poggenburg s.n. [Manchester, Sept. 19, '85] (Tc); Ruger s.n. [Manchester] (Tc); Schrenk s.n. [Manchester, July 25, '77] (Tc); N. Taylor 2853 (N); F. Wilson s.n. [Opposite Island Heights, July 26, 1909] (N--3); Camden Co.: Bassett s.n. [Atco] (I), s.n. [Atco, July 19, 1923] (N); Beringer s.n. [Atco, Aug. 1890] (Mi); Morong s.n. [Atco, Sept. 3, 1873] (Bc); Pennell 9075 (N), 9079 (N); Atlantic Co.: Gross 3016 (N); Cumberland Co.: Dreisbach 3593 (Mi); Pennell 1927 (N); Cape May Co.: Parker s.n. [Opp. Sea Isle City, Aug. 18, '82] (Bc); County undetermined: T. F. Allen s.n. [1870] (N); Collector undesignated s.n. [Pine barrens] (C); Commons s.n. [Pine barrens, Oct. 1, 1872] (N); Herb. Torrey s.n. [Pine barrens, June, 1818] (T); Leggett s.n. [Pine bar-

rens, Sept. 16--18, 1873] (Tc); A. V. Smith s.n. [N. J. pine barrens, July 28, 1935] (I). DELAWARE: Sussex Co.: N. L. Britton 56 (N); Canby s.n. [Ellendale, July 24, 1893] (Mi); Commons s.n. [June 18, 1875] (Bc); O'Neill 9096 (I); Pennell 12,903 (N). MARYLAND: Prince Georges Co.: S. F. Blake 10,665 (I); Tidestrom s.n. [July 4, 1907] (I); Worcester Co.: H. H. Rusby s.n. [Stockton, Aug. 1889] (C); County undetermined: Holm s.n. [Surattsville, Aug. 6, 1900] (I). DISTRICT OF COLUMBIA: Holm s.n. [Holmead, July 22, 1888] (I). VIRGINIA: Prince George Co.: Fernald, Long, & Smart 6790 (N). NORTH CAROLINA: Catawba Co.: Small & Heller 180 (C); Rowan Co.: A. A. Heller 180 (C, N), 181 (C), s.n. (N); J. K. Small s.n. [Dunn's Mtn., Aug. 18--27, 1894] (C); Dare Co.: Bartley & Pontius 503 (N); Buncombe Co.: Biltmore Herb. 3867a (I, N), 3867d (N); Rugel s.n. [Swanano, Jul. 1841] (Mi); Cumberland Co.: Biltmore Herb. 3867f (N); Brunswick Co.: Drushel 10,075 (N); New Hanover Co.: Biltmore Herb. 3867b (N); Coville 202 (N); County undetermined: Schweinitz s.n. (T). SOUTH CAROLINA: Orangeburg Co.: Eggleston 5027 (N). GEORGIA: Columbia Co.: Collector undesignated s.n. [1832] (C); Sumter Co.: R. M. Harper 444 (N); Lee Co.: Earle 3123 (N), s.n. [Leesburg, 6/20/1895] (N); McIntosh Co.: J. K. Small s.n. [About Darien Jct., June 25--27, 1895] (C); Lowndes Co.: J. K. Small s.n. [Near Valdosta, June 6--12, 1895] (C); County undetermined: Boykin s.n. (T). FLORIDA: Holmes Co.: Drushel 10,095 (N); Franklin Co.: Biltmore Herb. 3867c (N); Leon Co.: Berg s.n. [Near Tallahassee] (N); Duval Co.: Curtiss 3016 [June] (Bc, C), 3016 [July] (Bc), 5690 (N); Highlands Co.: McFarlin 7545 (N); Marion Co.: O'Neill 7781 (I); Charlotte Co.: J. H. Simpson 396 (C); Lake Co.: Nash 847 (C, Mi), 1722 (Mi); Orange Co.: O'Neill 7782 ["Count 13"] (I); Pasco Co.: O'Neill 81 (I), 1153 (I), 1815 (I); Hillsboro Co.: Leavenworth s.n. [Tampa Bay] (T); Polk Co.: McFarlin 3418 (I); Brevard Co.: H. N. Moldenke 233 (N); Manatee Co.: Tracy 7587 (N); Lee Co.: A. S. Hitchcock 375 (N); Broward Co.: Small & Carter 1029 (N); Dade Co.: H. N. Moldenke 5591 (N); County undetermined: Herb. Chapman s.n. [Florida] (C--2). ALABAMA: Mobile Co.: C. F. Baker s.n. [Mobile, 7/20/1897] (N); Bush 71 (N); Mackenzie 4051 (N); Pennell 4472 (N); Baldwin Co.: O. Blanton 86 (I); Mohr s.n. [Oct. 4, 1894] (I); Tracy 8043 (N--2). MISSISSIPPI: Harrison Co.: C. F. Baker 780 (C), s.n. [Biloxi, 7-23-1897] (N); Lloyd & Tracy 319 (N); Tracy 3428 (N), 6417 [Biloxi] (N), 6417 [Ocean Springs] (N--2). LOUISIANA: Natchitoches Par.: E. J. Palmer 7981 (N); Calcasieu Par.: A. Allison 207 (N); St. Tammany Par.: Langlois s.n. [9.IX. 1892] (I), s.n. [Mandeville, 15.VIII.1892] (I); Pennell 4144 (N); Orleans Par.: T. Drummond 356 (N); Parish undetermined: Hale 456 (T), s.n. (N). TEXAS: Smith Co.: Reverchon 2766 (N); Waller Co.: E. Hall 635 (N). UNITED STATES: State un-

determined: M. A. Curtis s.n. (C).

4a. ERIOCAULON DECANGULARE var. LATIFOLIUM Chapm. ex Moldenke, N. Am. Fl. 19: 21. 1937.

This variety inhabits sandy pinelands, and has been collected in anthesis in August.

Citations: FLORIDA: Franklin Co.: Herb. Chapman s.n. [Florida] (C--type). ALABAMA: Mobile Co.: Pennell 4465 (N).

6. ERIOCAULON DIOECUM Ruhl. in Fedde, Repert. 22: 29. 1925.

This species has been collected in anthesis in March.

Citations: CUBA: Pinar del Río: Ekman 12,807 (N--photo of type).

19. ERIOCAULON ECHINOSPERMOIDEUM Ruhl. in Fedde, Repert. 22: 31. 1925.

16. ERIOCAULON ECHINOSPERMUM C. Wright ex Sauv., Anal. Acad. Ci. Habana 7: 716. 1871.

This species inhabits borders of pineland lagoons, moist savannas, and shallow water at the edge of ponds, and has been collected in anthesis in January, September, and November.

Citations: CUBA: Pinar del Río: Britton, Britton, & Gager 7257 (N); Ekman 18,128 (N); Shafer 11,705 (N); C. Wright 3738 (T--isotype); Province undetermined: C. Wright s.n. (T).

38. ERIOCAULON EHRENBURGIANUM Klotzsch ex Körn. in Mart. Fl. Bras. 3 : 491. 1863.

Eriocaulon Benthami Schlecht. ex Körn. in Mart. Fl. Bras. 3' : 491, in syn. 1863 [not E. Benthami Kunth, 1841]; Eriocaulon Benthami Seem. apud Hemsl. Biol. Centr. Am. Bot. 3: 443, in syn. (1885), Hook. f. & Jacks. Ind. Kew. 1: 877. 1895 [not E. Benthami Kunth, 1841]; Eriocaulon microcephalum Hook. & Arn. apud Seem. Bot. Voy. Herald 221, in syn. (1854) and apud Hemsl. Biol. Centr. Am. Bot. 3: 443, in syn. 1885 [not E. microcephalum H.B.K., 1816]; Eriocaulon anceps Sessé & Moc. Fl. Mex. 17. 1893 [not E. anceps Walt., 1788].

Cotypes of E. Ehrenbergianum are Schiede s.n. from swamps in the valley of Toluca near La Ventilla, Mexico, and Ehrenberg & Aschenborn 531, Berlandier 760, and Schiede s.n. from marshy meadows in the neighborhood of Mineral del Monte and in the hills and other localities around Mexico City, Federal District. The first of these 4 cotypes is by inference designated as the logotype in N. Am. Fl. 19: 35 (1937). Cotypes of E. anceps are Sessé, Mociño, Castillo, & Maldonado 456 and 465, deposited in the Madrid herbarium.

E. Ehrenbergianum inhabits springy bogs and open marshes at high elevations, ascending to 7500 feet, and has been

collected in anthesis from July to October and December.

Citations: MEXICO: Chihuahua: Townsend & Barber 117 (N--2); Nayarit: J. N. Rose s.n. [August, 1897] (N); Jalisco: Beechey s.n. [Jalisco] (K); Collector undesigned s.n. [Sept. 6, '92] (F); Edw. Palmer 44 (C, K); Hidalgo: Pringle 8989 (N); Mexico: Schaffner 226 (C, M), 226a (N); Oaxaca: W. H. Camp 2265 (N); State undetermined: Sessé, Mociño, Castillo, & Maldonado 456 (N--photo, Q, Z--photo), 465 (N--photo, Q, Z--photo). GUATEMALA: Chimaltenango: Skutch 617 (M, N).

26. ERIOCAULON EKMANNII Ruhl. in Fedde, Repert. 22: 30.1925.

It is worth noting that Ruhland apparently intentionally spelled this specific name "Ekmanii", for he did the same with Lachnocaulon Ekmanii. In the opinion of the present writer the original spelling should be retained. The species inhabits swamps and has been collected in anthesis in October.

Citations: CUBA: Pinar del Río: Cuesta 374 (N); Ekman 17,888 (N--isotype).

20. ERIOCAULON FULIGINOSUM C. Wright ex Griseb. Cat. Pl. Cub. 226. 1866.

Eriocaulon scirpoides Griseb. Cat. Pl. Cub. 226. 1866; Eriocaulon trichosepalum C. Wright ex Sauv., Anal. Acad. Ci. Habana 7: 715. 1871; Eriocaulon sphaerospermum C. Wright ex Sauv., Anal. Acad. Ci. Habana 7: 716. 1871.

This species has been confused by some with E. Schiedeana and specimens have been erroneously distributed under that name. It inhabits moist and pineland savannas, banks of lagoons, mud at brooksides or in the shade of grasses, pine-lands, and the edges of ponds, and has been collected in anthesis from September to December. The type collection of E. trichosepalum is C. Wright 3740 and of E. sphaerospermum is C. Wright 3739, while a cotype collection of E. scirpoides is C. Wright 3238.

Citations: CUBA: Pinar del Río: Britton, Britton, & Gager 7060 (N); Ekman 17,864 (N), 18,127 (N); Shafer 10,663 (N); C. Wright 3239 (N--isotype, T--2 isotypes), 3740 (T); Isla de Pinos: Ekman 12,106a (N); Santa Clara: Combs 588 (N); León & Cazanas 5910 (N); Oriente: C. Wright 753 (N), 3238 (N, T); Province undetermined: C. Wright 3739 (T). BRITISH HONDURAS: Gentle 993 (F, I, M--2, N); Pelly 73 (F).

29. ERIOCAULON FUSIFORME Britton & Small in Britton, Bull. Torrey Club 44: 32. 1917.

This species inhabits pinelands and has been collected in anthesis in February.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wils-

on 14,951 (N--type).

39. *ERIOCAULON GUADALAJARENSE* Ruhl. in Engl. Pflanzenreich
4³⁰: 60. 1903.

This species inhabits wet places and has been collected in anthesis in November.

Citations: MEXICO: Jalisco: Pringle 1734 (C--isotype, K--isotype).

27. *ERIOCAULON HETEROPETALUM* Ruhl. in Fedde, Repert. 22: 33. 1925.

This species inhabits moist white sand on the shores of lakes and has been collected in anthesis in September.

Citations: CUBA: Pinar del Río: Ekman 17,253 (N--photo of type).

21. *ERIOCAULON INSULARE* Ruhl. in Fedde, Repert. 22: 32. 1925.

This species inhabits wet grassy places, pinelands, moist white sand barrens, and the borders of lakes, and has been collected in anthesis from September to November.

Citations: CUBA: Pinar del Río: Britton, Britton, & Gager 6960 (N); Ekman 17,808 (N--isotype); Isla de Pinos: Ekman 12,029a (N).

9. *ERIOCAULON KINLOCHII* Mc'denke, N. Am. Fl. 19: 23--24. 1937.

Citations: BRITISH HONDURAS: Kinloch 213 (F--type, N--photo of type, Z--photo of type).

25. *ERIOCAULON KÖRNICKIANUM* Van Heurck & Müll. Arg. in Van Heurck, Obs. Bot. 101. 1870.

This specific name is often written "Koernickianum", but in the opinion of the present writer the original spelling should be retained. The species inhabits springy places on prairies and wet sandy ground, and has been collected in anthesis in June and July.

Citations: ARKANSAS: Benton Co.: F. L. Harvey s.n. [Siloam Spring, June, 1885] (N); Logan Co.: Pyle 754 (De). OKLAHOMA: Puskamaha Co.: E. J. Palmer 8320 (N).

35. *ERIOCAULON LACUSTRE* Ruhl. in Fedde, Repert. 22: 33. 1925.

This species inhabits the water of shallow lakes and has been collected in anthesis in October.

Citations: CUBA: Pinar del Río: Ekman 17,877 (N--isotype).

8. *ERIOCAULON LINEARE* Small, Fl. SE. U. S., ed. 1, 236 & 1328. 1903.

This species inhabits moist or wet pine-barrens, the shallow or miry margins and wet sandy shores of ponds, shal-

low pine-barren ponds, bogs, wet woods, and even still water to 2 feet deep, and has been collected in anthesis from April to June and September.

Illustrations: Ann. N. Y. Acad. Sci. 17: pl. 23 & 25, f. 2. 1906; Small, Man. SE. Fl. 258. 1933.

Citations: NORTH CAROLINA: Henderson Co.: Wherry s.n. [Flat Rock Sta., 5-30-1927] (N). GEORGIA: Montgomery Co.: R. M. Harper 2146 (N); Bulloch Co.: R. M. Harper 830 (N--type); Lowndes Co.: R. M. Harper 1608 (N). FLORIDA: Santa Rosa Co.: R. M. Harper 85 (N); Walton Co.: Curtiss s.n. [Summer, 1885] (N--2); R. M. Harper 47 (N); Gulf Co.: Biltmore Herb. 3865a (N); Leon Co.: R. M. Harper 223 (N); Pasco Co.: O'Neill s.n. [Fish Lake, Feb. 20, 1927] (I). ALABAMA: Baldwin Co.: R. M. Harper 22 (N).

34. ERIOCAULON MELANOCEPHALUM Kunth, Enum. Fl. 3: 549. 1841.

Eriocaulon aquaticum Sagot ex Körn. in Mart. Fl. Bras. 3: 498, in syn. 1863; Lasiolepis aquatica Böckl., Flora 56: 91. 1873.

Citations: CUBA: Oriente: C. Wright 756 (N); Province undetermined: C. Wright 3240 (N, T).

34a. ERIOCAULON MELANOCEPHALUM var. LONGIPES Griseb. Cat. Pl. Cub. 226. 1866.

E. P. Killip, in a letter dated July 5, 1938, reports that his No. 32,380 from southwestern Pinar del Río is clearly this variety. He comments, however: "I just can't reconcile myself to its being even a variety of a South American species. We have no material [in the U. S. National Herbarium] of the species from South America, but you might just make a mental note that it is worth considering if the Cuban is not a full-fledged species". I may say, in response, that I, too, had my doubts about the Cuban "E. melanocephalum" and its variety longipes being conspecific with the South American E. melanocephalum. However, no authentic South American material of this species has been available to me for study and comparison and the original description yields no characters which would separate the two. Furthermore, some members of this family seem to have unusual distributions. For instance, Tonina fluviatilis and Paepalanthus Lamarckii are found both in Cuba and the Guianas. More intensive collecting in the West Indies and Central America may reveal all three species in the intervening area.

Citations: CUBA: Pinar del Río: C. Wright 3241 (T--isotype).

35. ERIOCAULON MEXICANUM Moldenke, N. Am. Fl. 19: 33. 1937.

This species inhabits springy places and has been col-

lected in anthesis in July.

Citations: MEXICO: Jalisco: Pringle 11,202 (N--type).

37. *ERIOCAULON MICROCEPHALUM* H.B.K. Nov. Gen. & Sp. Pl. 1: 253. 1816.

Eriocaulon pusillum Willd. ex Körn. in Mart. Fl. Bras. 3: 492, in syn. 1863 [not E. pusillum R. Br., 1810]; Eriocaulon brachypus Van Heurck & Müll. Arg. in Van Heurck, Obs. Bot. 1: 96. 1870; Eriocaulon mexicanum Liebm., in herb. [not E. mexicanum Moldenke, 1937].

The species has been collected in wet meadows and gravelly soil around mountain springs, at altitudes of 9000 to 10,000 feet, flowering in July, August, and October.

Citations: CALIFORNIA: Kern Co.: Xantus de Vesey s.n. [Fort Tifon] (T). MEXICO: Mexico: Pringle 6144 (C, K), 7361 (I, K, N), 13,228 (K); Rose & Painter 7929 (N); Schaffner 226b (C, M1, N), 426 (N); Puebla: Liebmänn s.n. [Chinantla] (K). COSTA RICA: San José: Standley & Valerio 43,637 (F), 43,830 (F). ECUADOR: Carchi: Lehmann 567 (K); Pichincha: Jameson 206 (K); Province undetermined: André K.1737 (K).

13. *ERIOCAULON MINUTISSIMUM* Ruhl. in Fedde, Repert. 22: 32. 1925.

The species inhabits moist places among grasses and has been collected in anthesis in November.

Citations: CUBA: Pinar del Río: Ekman 17,948 (N--isotype).

24. *ERIOCAULON MISERRIMUM* Ruhl. in Fedde, Repert. 22: 30. 1925.

The species inhabits moist places along roadsides and has been collected in anthesis in October.

Citations: CUBA: Isla de Pinos: Ekman 11,956 (N--isotype).

5. *ERIOCAULON OLIVACEUM* Moldenke, N. Am. Fl. 19: 22. 1937.

The species inhabits wet places and moist white sand of barrens and has been collected in anthesis in November.

Citations: CUBA: Isla de Pinos: Ekman 12,029 (N--type).

28. *ERIOCAULON OVOIDEUM* Britton & Small in Britton, Bull. Torrey Club 44: 32. 1917.

The species inhabits white sand areas and has been collected in anthesis in February.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wilson 14,220 (N--type).

32. *ERIOCAULON PALMERI* Ruhl. in Engl. Pflanzenreich 4³⁰: 48. 1903.

The species has been collected in anthesis from April to

November.

Citations: MEXICO: Durango: Edw. Palmer 172 (N--isotype).

30. ERIOCAULON PANAMENSE Moldenke, N. Am. Fl. 19: 31--32. 1937.

Citations: PANAMA: Chiriquí: Killip 3614 (F--type, It--photo of type, Ki--isotype, N--photo of type, Z--photo of type); Woodson, Allen, & Seibert 1130 (N).

18. ERIOCAULON PARKERI B. L. Robinson, Rhodora 5: 175. 1903.

Illustrations: Britton & Br. Ill. Fl., ed. 2, 1: f. 1141. 1913; Marie-Vict. Fl. Laurent. f. 244. 1935.

Cotypes are T. P. James s.n. from the shore of the Delaware River near Cooper's Creek, N. J., and C. F. Parker s.n. from between high and low water mark, Camden, N. J. The former is by inference regarded as the logotype in N. Am. Fl. 19: 27. 1937, although if one of the two collections is to be so designated it should certainly be the Parker collection, since the species is named after Parker and not after James! The species inhabits tidal mudflats, tidal pools in argillaceous ledges, shallow water along river shores and banks, and other places mostly submerged at high tide, flowering from July to October. The leaves and peduncles are often purplish-green throughout.

Citations: MAINE: Penobscot Co.: Fernald & Long 13,165 (I, Mi, N--2), 13,166 (N); Sagadahoc Co.: Fassett 157 (N); Fernald & Long, Plant. Exsicc. Gray. 174 (I, Mi, N--2), 15,167 (N). CONNECTICUT: Fairfield Co.: Eames 8976 (N); New London Co.: R. W. Woodward s.n. [Old Lyme, Aug. 1, 1918] (N). NEW YORK: Greene Co.: House 25,128 (N); Columbia Co.: Muenschner & Curtis 5600 (N); Rockland Co.: Muenschner & Curtis 5598 (N). PENNSYLVANIA: Philadelphia Co.: Conrad s.n. [Near Philadelphia] (T). NEW JERSEY: Mercer Co.: Mackenzie 7236 (N); Monmouth Co.: Carter s.n. [Belmar, July 12, 1910] (N); Burlington Co.: B. Long 4767 (N); Mackenzie 5671 (N), 5684 (N); N. Taylor 2558 (N); Ocean Co.: Mackenzie s.n. [West of Mantoloking, Sept. 21, 1912] (N); Camden Co.: Mackenzie 7344 (N); Pennell 9898 (N); C. S. Williamson s.n. [Fish House, Oct. 2, 1905] (N), s.n. [Fish House, July 28, 1906] (N); Atlantic Co.: B. Long 4721 (N); Cumberland Co.: B. Long s.n. [Millville, Oct. 7, 1909] (N). DELAWARE: Sussex Co.: N. L. Britton 24 (N). MARYLAND: Wicomico Co.: Carter s.n. [Salisbury, July 15, 1904] (N); County undetermined: Carter s.n. [Gunpowder Sta., Aug. 27, 1903] (N). VIRGINIA: Alexandria Co.: Dowell s.n. [Aug. 13, 1910] (N); New Kent Co.: Grimes 4135 (N).

14. ERIOCAULON PINARENSE Ruhl. in Fedde, Repert. 22: 32. 1925.

This species inhabits pinelands, mud, and the borders of small ponds, and has been collected in anthesis in February and March.

Citations: CUBA: Pinar del Río: Ekman 18,769 (N--isotype); Isla de Pinos: Britton, Britton, & Wilson 15,008 (N).

43. ERIOCAULON PRINGLEI S. Wats., Proc. Am. Acad. 23: 283. 1888.

The species is found in damp and wet places on plains, and has been collected in anthesis in October.

Citations: MEXICO: Chihuahua: Pringle 2018 (C).

11. ERIOCAULON PSEUDOCOMPRESSUM Ruhl. in Urb. Symb. Ant. 1: 492. 1900.

Eriocaulon gnaphalodes C. Wright apud Ruhl. in Urb. Symb. Ant. 1: 492, in syn. 1900 [not E. gnaphalodes Michx., 1803].

The species inhabits the Eleocharis belt at the edges of lakes and lagoons, and has been collected in anthesis in February.

Citations: CUBA: Pinar del Río: Cuesta 371 (N); Ekman 11,221 (N); Province undetermined: C. Wright 3741 (N--isotype, T--2 isotypes).

17. ERIOCAULON RAVENELII Chapm. Fl. S. U. S., ed. 1, 503. 1860.

The species inhabits wet places, low pinelands, hammocks, and everglades, and has been collected in anthesis from October to January.

Citations: SOUTH CAROLINA: Berkeley Co.: Ravenel s.n. [St. Johns] (C--type). FLORIDA: Broward Co.: Small & Small 4429 (N), 4447 (N); Dade Co.: A. A. Eaton s.n. [Miami, Nov. & Dec. 1903] (N); Small & Carter 654 (N), 888 (N), 1148 (N), 3067 (N), s.n. [Between Coconut Grove & Cutler] (N); Small & Nash s.n. [West of Miami, Nov. 1 & 9, 1901] (N).

42. ERIOCAULON SCHIEDEANUM Körn. in Mart. Fl. Bras. 3: 492. 1863.

Eriocaulon Jaliscoanum S. Wats., Proc. Am. Acad. 26: 157 (1891), of which the type is Pringle 2936, properly a straight synonym of this species, is sometimes cited "in part" as synonymous with E. bilobatum Morong. The specific name is usually lower-cased, but was originally published with a capital initial letter. Some specimens from British Honduras have been distributed under the name "E. Schiede-anum", but are actually E. fuliginosum, which see.

The species inhabits swamps and wet hollows in rocky slopes, ascending to 5000 feet, and has been collected in anthesis in October and November.

Citations: MEXICO: Jalisco: Barnes & Land 159 (F);

Fringlie 2936 (C), 6146 (C), s.n. [Near Guadalajara, Oct. 7, 1890] (C).

36. ERIOCAULON SCHIPPPII Standl. in Standl. & Record, Field Mus. Publ. Bot. 12: 90, hyponym (1936); Moldenke, N. Am. Fl. 19: 34. 1937.

The species inhabits the water of shallow pools in brackish swamps at low elevations, and has been collected in anthesis in September.

Citations: BRITISH HONDURAS: Schipp 647 (F--isotype, Mi--isotype, N--type).

15. ERIOCAULON SCLEROCEPHALUM Ruhl. in Fedde, Repert. 22: 31. 1925.

Cotypes of this species are Ekman 12191, 11975, 11990, and 10822 from moist places near the bay at Los Indios on white quartzite sand in mostly dried-out holes between dense tussocks of grass at Santa Bárbara, Isla de Pinos, and in sandy somewhat damp places at Herradura, Pinar del Río, Cuba. The species also inhabits pinelands, mud along brook-sides, and sand where water sifts through, and has been collected in anthesis in February, October, and November.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wilson 14,948 (N); Ekman 11,975 (N--cotype), 11,990 (N--cotype), 12,106 (N).

22. ERIOCAULON SEEMANNII Moldenke, N. Am. Fl. 19: 28--29. 1937.

Citations: PANAMA: Canal Zone: Seemann 295 (K--type, N--photo of type, Z--photo of type); Panamá: Woodson, Allen, & Seibert 1650 (N).

10. ERIOCAULON SEPTANGULARE With. Veg. Brit. 784. 1776.

?Cespa aquatica Hill, Herb. Brit. 1: pl. 66 [some copies]. 1769; Nasmythis articulata Huds. Fl. Angl., ed. 2, 1: 415. 1778; Eriocaulon pellucidum Michx. Fl. Bor. Am. 2: 166. 1803; Eriocaulon pumilum Raf. Atl. Journ. 121. 1832; Eriocaulon Noveboracense Fluk. ex Hook. in Curtis, Bot. Mag. 59: pl. 3126, in syn. 1832; Nasmythis septangularis (With.) Mart., Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17¹: 58, pl. 2, f. 2, hyponym. 1835; Eriocaulon articulatum (Huds.) Morong, Bull. Torrey Club 18: 353. 1891; Eriocaulon decangulare Hope apud Hook. f. & Jacks. Ind. Kew. 1: 878, in syn. 1895 [not E. decangulare L., 1753]; Eriocaulon aquaticum (Hill) Druce, Pharm. Journ. ser. 4, 29: 700. 1909 [not E. aquaticum Sagot, in syn., 1863]; Eriocaulon septangulare var. natans Hexamer & Meier, in herb.

The 1762 date given by Ruhland for Nasmythis articulata is erroneous. This binomial was not published until 1778, as

has been pointed out by me in N. Am. Fl. The 1818 date given by Morong for E. septangulare is also erroneous (as has been pointed out by Fernald in Rhodora) and led to his faulty use of the specific name "articulatum", taken from Hudson's Nasmythia articulata (1778). Eriocaulon septangulare was actually first published in 1776.

The species inhabits tamarack and other bogs, swamps, ponds, brackish marshes, sandy and muddy tidal flats, quiet pools, muddy or mucky margins and banks of ponds and streams, stream deadwaters, shallow snady-bottomed ponds, low sandy or drying mucky shores, gravelly soil, sandy shallows and shallow pools in peaty barrens, sandy shores of rivers, pond-holes in savannas, boggy soil at the margins of ponds, and in shallow or even rather deep quiet water. It has been collected in anthesis from July to September.

Illustrations: Hill, Herb. Brit. 1: pl. 66 [some copies]. 1769; Philos. Trans. Lond. 59: 243, pl. 12. 1770; Sowerby & Sm. Engl. Bot. 11: pl. 733. 1800; Curtis, Fl. London., ed. 2, 4: pl. 52. 1819--1821; Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17: pl. 2, f. 2. 1835; M. E. Jackson, Pict. Fl. f. 1387. 1840; Baxter, Brit. Bot., ed. 2, 6: pl. 465. 1843; Deakin, Florigr. Brit. 3: f. 1457. 1847; Johnson & Sowerby, Brit. Wild Fl. f. 1303. 1858--1860; Trans. Linn. Soc. Lond. 22: pl. 68, f. 11--15. 1859; T. Moore, Field Bot. Comp. pl. 24. 1862; Benth. Ill. Handb. Brit. Fl. f. 1066. 1865; Le Maout & Decaisne, Traité Gén. Bot., ed. 1, 597 & 598. 1868; Syme, Engl. Bot. 10: pl. 1546. 1870; Le Maout & Decaisne, Gen. Syst. Bot. 872. 1873; Pratt, Fl. Pl. Grasses, Sedges, & Ferns Gr. Brit., ed. 3: 5: pl. 228. 1873; Le Maout & Decaisne, Traité Gén. Bot., ed. 2, 611 & 612. 1876; Hogg & Johnson, Wild Fl. Gr. Brit. 11: pl. 894. 1880; Baillon, Hist. Pl. 12: 398, f. 371. 1894; Britton & Br. Ill. Fl., ed. 1, 1: 371, f. 899. 1896; Creevey, Flow. Field, Hill & Swamp 129. 1898; Rendle, Fl. Pl. 1: f. 132. 1904; Praeger, Tour. Fl. W. Ireland pl. 6. 1909; Walton, Pract. Guide Wild Fl. & Fr. f. 32. 1909; Journ. Roy. Hort. Soc. Lond. 36: 301, f. 107. 1910; Karst. & Schenck, Veg.-Bild. 8: pl. 31. 1910; G. T. Stevens, Ill. Guide Fl. Pl. pl. 9, f. 9. 1910; Ann. Rep. New Jersey State Mus. 1910: pl. 28, f. 1. 1912; Creevey, Harper's Guide Wild Fl. 45. 1912; Horwood, Plant Life Brit. Isles 3: 340. 1915; Britton & Br. Ill. Fl., ed. 2, 1: 454, f. 1140. 1913; Walton, Flower-Finder, ed. 1, 129. 1914; ed. 2, 129. 1916; House, Wild Fl. New York [Mem. N. Y. State Mus. 15:] 1: pl. 6, f. A. 1918; Fitch & Sm. Ill. Brit. Fl., ed. rev. 4, Iss. 2: f. 1082. 1919; N. Taylor, Guide Wild Fl. f. 13. 1928; Pool, Flowers & Fl. Pl., ed. 1, f. 169. 1929; Marie-Vict. Fl. Laurent. f. 244. 1935.

Citations: IRELAND: Groves & Groves s.n. [8.VIII.1892]

(I); Tidestrom 11,236 (I). SCOTLAND: Salmon s.n. [circa 1843] (I). ISLE OF SKYE: Greville s.n. (Ml). ST. PIERRE: Ar-sène 130 (N). SABLE ISLAND: Macoun 22,639 (N); St. John 1168 (N). NEWFOUNDLAND: Fernald, Long, & Dunbar 26,459 (N); Fernald & Wiegand 5068 (N); Howe & Lang 856 (N), 1421 (N); Robinson & Schrenk 112 (C), s.n. [12 Aug. 1894] (C). NOVA SCOTIA: Cape Breton Co.: Howe & Lang 686 (N), 765 (N); Macoun s.n. [North Sydney, July 14, 1883] (C); Nichols 1623 (Ml); C. B. Robinson 396 (N); Richmond Co.: Rousseau 35,579 [Nat. Herb. Canada 130,088] (N); Guysborough Co.: C. A. Hamilton 25,149 (N); Halifax Co.: Howe & Lang 1583 (N), 1603 (N); Digby Co.: Fernald & Long 20,594 (N); Yarmouth Co.: Fernald, Bissell, Graves, Long, & Linder 20,597 (N). NEW BRUNSWICK: St. John Co.: Fowler s.n. [St. John, Sept. 1873] (Ml). QUEBEC: Rimouski Co.: C. S. Williams 1106 (N); Temiscouata Co.: J. I. Northrop 184 (C); Portneuf Co.: Marie-Victorin s.n. [Lacs du Laurentides, Août, 1912] (I); Montcalm Co.: Pennell 16,704 (N); Ottawa Co.: Marie-Victorin 15,737 (N); County undetermined: Anselm 435 (N). ONTARIO: Simcoe Co.: Britton, Britton, & Timmerman s.n. [Port Sandfield, Sept. 1, 1889] (C); St. Joseph Island: Harper & Harper s.n. [Aug. 3, '97] (I). MAINE: Penobscot Co.: Fernald 369 (C); F. L. Harvey s.n. [Orono, 1884] (C); Waldo Co.: Fernald & Long 13,162 (N); Friesner 10,224 (N); Mount Desert Island: T. G. White s.n. [Shores of Jordan's Pond] (C); County undetermined: Briggs s.n. [Chemo Stream, Aug. 1891] (N). NEW HAMPSHIRE: Coos Co.: Minns s.n. [Crawford's, Aug. 1887] (C); Grafton Co.: Knight s.n. [Echo Lake, 12.7.79] (N); Langdon s.n. [Little Squaw Lake, July 27, 1894] (Ml); Merrimack Co.: Clinton s.n. [Warner, August, 1935] (I); Cheshire Co.: E. J. C. Gilbert s.n. [Keene, Sept. 1875] (N); Hillsboro Co.: Batchelder s.n. [Merrimack, Aug. 4, 1917] (N); Sheehan s.n. [Goffstown, July 31, 1931] (I). VERMONT: Addison Co.: Brainerd s.n. [Lake Dunmore, Aug. 16, 1878] (Ml, N); Herb. Chapman s.n. [Lake Dunmore, 1859] (C); Orange Co.: Denslow s.n. [Newbury, July 31, 1923] (N). MASSACHUSETTS: Berkshire Co.: E. Davis s.n. [Pittsfield] (T); Hampshire Co.: Collector undesignated s.n. [Southampton Pond, 1829] (C); Hampden Co.: Seymour 268 (N); Essex Co.: L. T. Chamberlain s.n. [Wenham Pond, Aug. 1899] (N); Morong s.n. [Hamilton, July 27, 1875] (Bc); R. H. Rich s.n. [July 26, 1896] (I); Middlesex Co.: H. H. Bartlett 313 (Ml); Morong s.n. [South Natick, Sept. 15, 1881] (Bc); Norfolk Co.: S. F. Blake 4366 (I); Ruggles s.n. [Near Milton] (Ml); Plymouth Co.: Herb. Torrey Botanical Club s.n. [Hanover] (Tc); Barnstable Co.: Hollick s.n. [Provincetown] (N); Dukes Co.: E. P. Bicknell 231 (N); Blodgett s.n. [Martha's Vineyard, Aug. 19, '93] (N--2); Fogg 2508 (N); A. B. Northrop s.n. [Nashawena, Aug. 1901] (N), s. n. [Nashawena, July--Aug. 1901] (N); Nantucket Co.: C. A.

Devis s.n. [Nantucket, 14 Aug. 1911] (M); County undetermined: C. F. Austin s.n. [East Mass., 1860] (C). CONNECTICUT: Litchfield Co.: Leggett s.n. [Canaan Pond] (T); Underwood 3124 (C), s.n. [West Goshen, Aug. 1890] (C); Middlesex Co.: Denslow s.n. [Killingworth, Sept. 5, 1902] (N); County undetermined: D. C. Eaton s.n. (T). NEW YORK: St. Lawrence Co.: Phelps 296 (N); Oswego Co.: House 5822 (N); Hamilton Co.: B. B. Lambert 8 (N); Madison Co.: House s.n. [North Bay of Oneida Lake, July, 1901] (N), s.n. [North shore, Oneida Lake, Aug. 1903] (N); Warren Co.: W. Cooper s.n. [Lake George, Aug. 1817] (T); Wehmeyer s.n. [Hart Lake, Sept. 8, 1930] (M); Washington Co.: A. Fitch s.n. [East Greenwich, 19.4. 13] (M); Rensselaer Co.: H. H. Eaton s.n. [Sand Lake, 1829] (T); House 21,951 (N); Steuben Co.: Lucy 2237 (N); Sullivan Co.: P. Wilson s.n. [Sand Pond, Aug. 13, 1918] (N), s.n. [Lake Shandelea, Aug. 7, 1918] (N); Ulster Co.: P. Wilson s.n. [Lake Katrine, Aug. 18, 1916] (N); Dutchess Co.: Fennell 8431 (N); Orange Co.: Lt. Bailey s.n. [West Point] (T); Raup 7748 (N); Putnam Co.: Herb. Chapman s.n. [Lake Mahopac, Aug. 1848] (C); Westchester Co.: W. Cooper s.n. [Near Tarrytown, August, 1819] (T); Cushman & Word s.n. [Shore of South Pond, Aug. 1910] (N); Leggett s.n. [Lake Mohegan, Sept. 6, 1868] (C); Muenscher & Curtis 5611 (N); Fennell 8400 (N); Queens Co.: Bisky s.n. [Lakeville] (C); Nassau Co.: E. P. Bicknell 230 (N), s.n. [Rockville Center, July 25, '03] (N); Clute & Wilson s.n. [Hempstead, July 20--21, 1899] (N); Ferguson 2483 (N), s.n. [Meadow Brook, 8-26-20] (N), s.n. [Hempstead, 7-25-19] (N); P. Wilson s.n. [Merrick, Sept. 11, 1915] (N); Suffolk Co.: Clute 116 (N); Ferguson 302b (N), 1869 (N), 2296 1/2 (N), 7755 (N). PENNSYLVANIA: Luzerne Co.: J. K. Small s.n. [Lily Lake, Aug. 15, 1889] (N); Pike Co.: Nash s.n. [Twin Lakes, July 30, 1909] (N). NEW JERSEY: Sussex Co.: N. L. Britton s.n. [Morris Pond, Sept. 13, 1887] (C); Mackenzie 4417 (N--2), 7277 (N); W. de W. Miller 1334 (N); Nash s.n. [July 26, 1909] (N); J. K. Small s.n. [Budd's Lake, August 12--14, 1890] (I); Morris Co.: Collector undesignated s.n. [Schooley's Mtn., August, 1820] (C); Mackenzie 796 (N), 1021 (N); Tuckerman s.n. [Mountain Lakes] (T); Ocean Co.: Gleason, Smith, & Alexander 173 (N); Hexamer & Meier s.n. [Manchester pond, Aug. 25] (N); Mackenzie 3846 (N--2), 4850 (N), 5277 (N), s.n. [Waretown, Sept. 1922] (N); Camden Co.: Crawford & Bliss s.n. [Atco, July 10, 1927] (N); O'Neill 8190 (I); Atlantic Co.: Beals s.n. [Hammonton Lake] (N); Gross 3017 (N); Fennell 8194 (N); County undetermined: Brinton s.n. [Pine barrens, Sept. 1892] (C). MARYLAND: Harford Co.: C. S. Williamson s.n. [Havre-de-Grace, Sept. 1, 1906] (N); Wicomico Co.: Canby s.n. [Salisbury, Sept. 1887] (C); Worcester Co.: H. H. Rusby s.n. [Stockton, Aug. 1889] (C). INDIANA: Steuben Co.: C. C. Deam 1290 (N), 20,896 (N),

20,952 (N); Whitley Co.: C. C. Deam s.n. [Round Lake, 9-1-97] (N). MICHIGAN: Isle Royale Co.: C. A. Brown 3462 (MI), 3626 (MI); Foots s.n. [July 19, 1868] (MI); McFarlin 2381 (MI); Univ. of Michigan party s.n. [July, 1868] (MI), s.n. [1868] (MI); Houghton Co.: C. A. Davis s.n. [Sept. 1905] (MI); Iron Co.: C. A. Davis s.n. [Crystal Falls, Aug. 1905] (MI); Marquette Co.: C. K. Dodge 468 (N), s.n. [Aug. 30, 1916] (MI); Duckworth s.n. [Little Lake, Aug. 4, 1906] (MI); Metcalf 2172 (N); Alger Co.: Fernald & Pease 3220 (MI); Chippewa Co.: C. K. Dodge s.n. [Aug. 30, 1914] (MI); F. J. Hermann 7146 (MI, N); N. A. Wood s.n. [Whitefish Point, 1912] (MI); Cheboygan Co.: Ehlers 112 (MI), 1109 (MI), 1686 (MI), 5153 (MI); Erlanson 395 (MI); Gleason & Gleason 202 (N); Miner s.n. [Aug. 11, 1931] (I); Presque Isle Co.: Ehlers 5440 (MI), 6150 (MI); F. J. Hermann 7012 (MI, N); Mason Co.: Chaney 67 (N); Gratiot Co.: C. A. Davis s.n. [Alma, Aug. 13, '95] (MI--3), s.n. [Alma, Aug. '95] (MI); Cass Co.: Gates 858 (MI); Herb. Univ. of Michigan s.n. [Aug. 25, 1838] (MI). WISCONSIN: Burnett Co.: Fassett 7711 (N); Calumet Co.: Hasse s.n. [Lake Hilbert, Aug. '84] (N); County undetermined: Hasse s.n. [Northern Wisconsin, July, 1882] (N); Houghton s.n. [Lac des Isles, Aug. 5, 1831] (MI). MINNESOTA: St. Louis Co.: Butters s.n. [Clear Lake, Aug. 24, 1919] (N); Cook Co.: Butters & Buell 474 (N); Crow Wing Co.: Sandberg s.n. [Aug. 1891] (N); Chisago Co.: B. C. Taylor s.n. [Linn Lake, Aug. 1892] (C), s.n. [Center City, Aug. 1892] (MI). LOCALITY OF COLLECTION UNDESIGNATED: G. L. Ames s.n. [Mt. Luber, W., Sept. 1857] (MI); Collector undesignated s.n. (C); G. W. Wright s.n. [1876] (To).

23. ERIOCAULON SIGMOIDEUM C. Wright ex Sauv., Anal. Acad. Ci. Habana 8: 48. 1871.

Citations: CUBA: Province undetermined: C. Wright 3737 (T--isotype).

40. ERIOCAULON TEPICANUM Moldenke, N. Am. Fl. 19: 36. 1937.

This species has been collected in anthesis in January and February.

Citations: MEXICO: Nayarit: Edw. Palmer 2029 (N--type).

12. ERIOCAULON TEXENSE Körn., Linnaea 27: 594. 1856.

This species inhabits swamps and the wet soil of moist pinelands, and has been collected in anthesis in May.

Citations: TEXAS: Smith Co.: Reverchon 4359 (N); County undetermined: T. Drummond II.409 (T--isotype).

41. ERIOCAULON WILLIAMSII Moldenke, N. Am. Fl. 19: 36. 1937.

This species inhabits the clay of dried-up ponds, and has been collected in anthesis in February and March.

Citations: BRITISH HONDURAS: W. C. Meyer 134 (F). PANAMA: Coclé: R. S. Williams 299 (N--type).

LACHNOCAULON Kunth, Enum. Pl. 3: 497. 1841.

A genus of about 10 species, all North American.

10. LACHNOCAULON ANCEPS (Walt.) Morong, Bull. Torrey Club 18: 360. 1891.

Eriocaulon anceps Walt. Fl. Car. 83. 1788; Eriocaulon villosum Michx. Fl. Bor. Am. 2: 166. 1803; ?Eriocaulon pubigerum Bong., Mém. Acad. St.-Pétersb., sér. 6, 1: 628, pl. 42. 1831; Lachnocaulon Michauxii Kunth, Enum. Pl. 3: 497. 1841.

The species inhabits sandy and wet places, low or moist sandy pinelands, flatwoods, ditches, marshes, pinewood swamps, wet peaty margins of pine woods, sphagnum-magnolia swamps, low grassy pine-barrens, and argillaceous or siliceous biggy depressions and prairies, and has been collected in anthesis from May to October. Some material of L. minus has been confused with this species in the past and distributed under the name of L. Michauxii.

The Beyrich specimen cited below is of special interest. It was originally identified and labelled as "Eriocaulon villosum Michx.", but in pencil has been added "L. Beyrichianum Körn. non villosum". It does not, however, agree with the description of L. Beyrichianum and so may not actually represent the type collection of that species.

Illustrations: Mém. Acad. St.-Pétersb., sér. 6, 1: pl. 42. 1831; Britton & Br. Ill. Fl., ed. 1, 1: 373, f. 903. 1896; Engl. Pflanzenreich 4³⁰: 241, f. 36. 1903; Britton & Br. Ill. Fl., ed. 2, 1: 456, f. 1145. 1913.

Citations: VIRGINIA: Isle of Wight Co.: Fernald & Long 6121 (N); James City Co.: Grimes 3761 (N); Prince George Co.: Fernald, Long, & Smart 5698 (N). NORTH CAROLINA: Bladen Co.: Biltmore Herb. 2755 (N); Oosting 3555 (N); New Hanover Co.: M. E. Hyams s.n. [Wilmington, July, 1879] (Bc). SOUTH CAROLINA: Kershaw Co.: House 2685 (N); Florence Co.: E. B. Bartrem 2277 (N); Ravenel s.n. [Florence, 1879] (C, Mi); Aiken Co.: Ravenel s.n. [Aiken, 1870] (C); Dorchester Co.: Gibbes s.n. [Summerville, May 25, 1855] (N). GEORGIA: Richmond Co.: Cuthbert 141 (N), s.n. [Augusta, May, 1881] (N); Sumter Co.: R. M. Harper 443 (N); Emanuel Co.: R. M. Harper 804 (N); Worth Co.: Pollard & Maxon 562 (N); County undetermined: Boykin 12 (T); Le Conte s.n. (T). FLORIDA: Alachua Co.: O'Neill 633 (I); Nassau Co.: Drushel 10,135 (N); Duval Co.: Curtiss 3021 (Bc, C, I); Keeler s.n. [Vicinity of Mayport & Jacksonville] (C); Lighthipe 452 (N); Clay Co.: Canby s.n. [Hibernia, 1869] (N); Lake Co.: A. S. Hitchcock s.n. [Eustis, June--July, 1894] (I); Nash 1942 (C, Mi); Okecho-

bee Co.: O'Neill "Count 181" (I); Orange Co.: Huger s.n. ["X.C.I."] (N); O'Neill "Count 100" (I); Pasco Co.: O'Neill 786 (I), 7783 (I), 7787 (I); Hillsboro Co.: Britton & Wilson 19 (N); Folk Co.: McFarlin 6381 (I); Manatee Co.: Tracy 7586 (N); Seminole Co.: C. Skottsberg s.n. [Sanford, 14.5.1935] (Go); Monroe Co.: Blodgett s.n. [Key West] (T); County undetermined: Biltmore Herb. 2755a (N); Herb. Chapman s.n. [Florida] (C); Herb. Columbia Univ. s.n. [Fla.] (C--2); Herb. Le Roy s.n. [Fla.] (C); O'Neill s.n. [Prairies, Oct. 28, 1929] (I). ALABAMA: De Kalb Co.: Ruth 133 (N); Mobile Co.: C. F. Baker 841 (C); Bush 107 (N); Dukes 9 (N); Gates, Fletcher, & Jewett 188 (M); Jewett s.n. [Mobile, May 9, 1839] (M--2); Mackenzie 4059 (N); County undetermined: Buckley s.n. [June] (T). MISSISSIPPI: Harrison Co.: Lloyd & Tracy 320 (N); Jackson Co.: Tracy 5031 (M, N). LOUISIANA: St. Tammany Par.: Langlois s.n. [Mandeville to Covington, April, 1879] (I); Orleans Par.: Ingalls s.n. (T); Parish undetermined: Hale 160 (T). TEXAS: Hardin Co.: Whitehouse 581 (N). CUBA: Isla de Pinos: Ekman 12,410 (N). LOCALITY OF COLLECTION UNDESIGNATED: Beyrich s.n. [Amer. bor.] (M).

7. LACHNOCAULON BEYRICHIANUM Sporleder ex Körn., Linnaea 27: 567. 1856.

This species inhabits low or rather dry pine-barrens, the borders of swamps, sandy shores, and springy places, and has been collected in anthesis from March to June and August. The binomial is often inaccurately accredited to Körnicke. See under L. anceps for comments about a Beyrich specimen in the herbarium of the University of Michigan.

Citations: GEORGIA: Charlton Co.: R. M. Harper 1491 (N). FLORIDA: St. Johns Co.: M. C. Reynolds s.n. [St. Augustine, Mar.--June, 1875] (C, M).

3. LACHNOCAULON CUBENSE Ruhl. in Fedde, Repert. 22: 34. 1925.

The species inhabits sandy savannas, and has been collected in anthesis in August.

Citations: CUBA: Santa Clara: Ekman 17,118 (N--photo of type).

6. LACHNOCAULON DIGYNUM Körn., Linnaea 27: 570. 1856.

Lachnocaulon diandrum Van Heurok & Mill.-Arg. in Van Heurok, Obs. Bot. 1: 108. 1870; Lachnocaulon anceps Benth. & Hook. f. apud Ruhl. in Engl. Pflanzenreich 4³⁰: 242, in syn. 1903 [not L. anceps (Walt.) Morong, 1891].

The species inhabits moist sandy pinelands, and has been collected in anthesis in September.

Citations: ALABAMA: Mobile Co.: Pennell 4474 (N). MISSISSIPPI: Harrison Co.: Lloyd & Tracy 318 (N).

8. *LACHNOCAULON ECILIATUM* Small, Fl. SE. U. S., ed. 1, 235 & 1328. 1903.

The species inhabits sandy shores of small lakes and margins of ponds, and has been collected in anthesis in January, August, and September.

Citations: FLORIDA: Walton Co.: Curtiss 3022 (Bo--isotype, C--type, I--isotype, N--isotype); Putnam Co.: R. M. Harper 7 (N); Lake Co.: Biltmore Herb. 15,001d (N).

2. *LACHNOCAULON EKMANNII* Ruhl. in Fedde, Repert. 22: 34. 1925.

The species inhabits wet sandy places, sandy banks of lakes, and white sand in pinelands, and has been collected in anthesis in November and December. It is worth pointing out that Ruhland apparently spelled this specific name "Ek-mannii" intentionally, for he spelled it thus also in the case of Eriocaulon Ekmannii. In the opinion of the present writer, the original spelling should be retained. The species has in the past been confused with the continental L. Engleri and specimens distributed under that name.

Citations: CUBA: Pinar del Río: Ekman 18,132 (N--2, N--fragment & photo); Shafer 11,011 (N--2).

1. *LACHNOCAULON ENGLERI* Ruhl. in Engl. Pflanzenreich 4³⁰: 241. 1903.

Eriocaulon maritimum Chapm., in herb.; Lachnocaulon maritimum Torr., in herb.; Lachnocaulon glabrum Chapm., in herb. [not L. glabrum Körn., 1856].

The species inhabits damp sandy and springy places, ditches, and lake shores, and has been collected in anthesis in January and July. Vivipary is quite conspicuous on some heads of O'Neill 7785a. The species has been confused by some with L. glabrum, while the Cuban material distributed under this name is actually L. Ekmannii.

Citations: FLORIDA: Washington Co.: Chapman s.n. [St. Andrews Bay, 1838] (C); Herb. Le Roy s.n. [St. Andrews Bay] (N--2); Putnam Co.: R. M. Harper 8 (N); Lake Co.: Nash 1184 (C--isotype, Mi--isotype); Pasco Co.: O'Neill 7785a (I); Orange Co.: O'Neill s.n. [Lake Oia, July 2, 1929] (I); County undetermined: Chapman s.n. [Florida] (T); Collector undesignated s.n. [Florida] (N).

3. *LACHNOCAULON FLORIDANUM* Small, Fl. SE. U. S., ed. 1, 235 & 1328. 1903.

The species inhabits low sandy places, and has been collected in anthesis in June. The specific name is often written with a capital initial letter.

Citations: FLORIDA: Lake Co.: Nash 1981 (C--type, N--isotype).

4. LACHNOCAULON GLABRUM Körn., Linnaea 27: 568. 1856.

The species inhabits low pinelands, damp woods, prairies, palmetto hammocks, flatwood ponds, and wet sandy places, and has been collected in anthesis in March, May, July, August, October, and November.

Citations: FLORIDA: Lee Co.: A. S. Hitchcock 374 (N); J. K. Small 8339 (N--2); J. P. Standley 33 (N); Broward Co.: Small & Carter 1024 (N); Small & Wilson 1608 (N), 1783 (N); Dade Co.: Small & Carter 690 (N); Small, Mosier, & Small 6892 (N), 6912 (N); Small & Wilson 1613 (N).

9. LACHNOCAULON MINUS (Chapm.) Small, Fl. SE. U. S., ed. 1, 235. 1903.

Lachnocaulon Michauxii var. minor Chapm. Fl. S. U. S., ed. 3, 531. 1897; Lachnocaulon minor (Chapm.) Small, F. SE. U. S., ed. 1, 1328, sphalm. 1903; Lachnocaulon Michauxii minus Chapm. ex Small, Man. SE. Fl. 257, sphalm. 1933.

The species inhabits moist soil or cultivated ground, low pine-barrens, pinelands, and the area above high-water mark on the sandy shores and margins of ponds and lakes, and has been collected in anthesis in March, from May to September, and in November. It has been confused by some in the past with L. Beyrichianum, L. glabrum, and L. Michauxii [= L. anceps], and with Paepalanthus flavidulus [= Syngonanthus flavidulus] and the Brazilian P. pilulifer Körn. and herbarium material has been distributed under those names.

Citations: NORTH CAROLINA: Halifax Co.: C. S. Williamson s.n. [Weldon] (N); New Hanover Co.: Canby s.n. [Prope Wilmington, Oct. 1867] (M); C. S. Williamson s.n. [Wilmington] (N). GEORGIA: Lowndes Co.: R. M. Harper 1607 (N). FLORIDA: Walton Co.: Curtiss 5911 (N); Liberty Co.: Herb. Chapman s.n. [Bristol] (N--type); Leon Co.: Berg s.n. [Near Tallahassee] (N); Clay Co.: Canby s.n. [Hibernia, March, 1869] (N); Lake Co.: R. M. Harper 42 (N); A. S. Hitchcock s.n. [Eustis, June--July, 1894] (N); Nash 148 (C, M), 1295 (C, M), 1855 (C); Volusia Co.: Curtiss 6894 (N); Pasco Co.: O'Neill 7785 (I); Broward Co.: Small & Carter 1037 (N).

PAEPALANTHUS Mart., Nov. Act. Physico-med. Acad. Caes.

Leopold.-Carol. Nat. Cur. 17: 13. 1835.

Dupatya Vell. Fl. Flum. 35. 1825 [nom. rejic.]; Stephanophyllum Guill. in Deless. Icon. Sel. 3: 61, pl. 98, in obs. 1837; Cladocaulon G. Gardn. in Hook. Icon. Pl. pl. 528. 1843; Limnoxeranthemum Salzm. ex Steud. Syn. Pl. Cyp. 2: 281, in syn. 1855; Lasiolopia Bock., Flora 41: 90, in part. 1873.

Sections III and IV of Eriocaulon as considered in Steud. Syn. Pl. Cyp. 2: 273 (1855) also belong here. It is most unfortunate that the present International Rules force us to

use the generic name Paepalanthus instead of the name Dupatya, which was published validly 10 years earlier!

A genus of about 450 species of tropical America, most numerous in Brazil.

5. PAEPALANTHUS ALSINOIDES C. Wright ex Sauv., Anal. Acad. Ci. Habana 8: 49. 1871.

This binomial is accredited by Britton to Wright and Sauvalle and the synonymous cheironym, Dupatya alsinoides (Wright & Sauv.) Britton, occurs on widely distributed specimens. The species inhabits gravelly pinelands and dry sandy pine woods, and has been collected in anthesis in September and December.

Citations: CUBA: Pinar del Río: Britton, Britton, & Gager 7090 (N), 7130 (N); Ekman 17,918 (N); C. Wright 3743 (N--isotype, T--isotype); Province undetermined: C. Wright s.n. (T).

- 5a. PAEPALANTHUS ALSINOIDES var. MINIMUS Jennings, Ann. Carnegie Mus. 11: 89, pl. 17, f. E--H. 1917.

The variety inhabits white sand or gravelly soil, sandy pinelands and pine-barrens, and hillsides, and has been collected in anthesis in February, March, May, and October.

Illustrations: Ann. Carnegie Mus. 11: pl. 17, f. E--H. 1917.

Citations: CUBA: Pinar del Río: Ekman 11,034 (N); Shafer 10,682 (N--2); C. Wright 3743a (N); Isla de Pinos: Britton, Britton, & Wilson 14,144 (N); Ekman 11,965 (N), 12,100 (N); Jennings 387 (N--isotype).

3. PAEPALANTHUS CHIAPENSIS Moldenke, N. Am. Fl. 19: 39. 1937.

The species inhabits wet localities and even shallow water of ponds, and has been collected in anthesis in May.

Citations: MEXICO: Chiapas: Purpus 179 (N), 10,565 (N--type).

1. PAEPALANTHUS COSTARICENSIS Moldenke, N. Am. Fl. 19: 38. 1937.

The species inhabits sphagnum bogs at high elevations, ascending to 6400 feet, and has been collected in anthesis in December.

Citations: COSTA RICA: San José: P. C. Standley 42,326 (F--type, N--photo of type, Z--photo of type).

9. PAEPALANTHUS DOMINGENSIS Ruhl. in Urb. Symb. Ant. 1: 485. 1900.

Cotypes are Eggers 2216 and 2216b from among rocks at Valle Nuevo, altitude 2270 m., Dominican Republic. The species also inhabits grassy places at high elevations, and has

been collected in anthesis in June and July.

Citations: HISPANIOLA: Dominican Republic: Fuertes 1748 (N); Türkheim 3422 (N).

7. PAEPALANTHUS GENTLEI Moldenke, N. Am. Fl. 19: 40-41. 1937.

The species has been collected in anthesis in December. It apparently grown in company with P. Lamarckii, for both species are intimately mixed on many sheets of the type collection. The P. Lamarckii material is here regarded as Gentle 992a.

Citations: BRITISH HONDURAS: H. H. Bartlett 11,874 (M1); Gentle 992 (F--isotype, I--isotype, M1--2 isotypes, N--type); O'Neill 8547 (I, M1).

6. PAEPALANTHUS LAMARCKII Kunth, Enum. Pl. 3: 506. 1841.

Eriocaulon fasciculatum Lam. Encycl. Méth. 3: 276. 1789 [not E. fasciculatum Rottb., 1778]; Paepalanthus Ottonis Klotzsch in Schomb. Reise in Br. Guian. 3: 1115. 1848; Eriocaulon Lamarckii (Kunth) Steud. Syn. Pl. Cyp. 276. 1855; Lasiocarpus pilosa Bock., Flora 56: 9. 1873; Dupatya Lamarckii (Kunth) Kuntze, Rev. Gen. Pl. 2: 746. 1891.

The species apparently grows in company with P. Gentlei and Syngonanthus Bartlettii, for it is intimately mixed with these species on sheets of Gentle 992 and H. H. Bartlett 11,263. The latter collection also has several other contaminations, mostly xyridaceous, cyperaceous, and juncaceous. It inhabits roadsides, pinelands, swampy places, and savannas near sea-level and is said to be "rare" in British Honduras. It has been collected in anthesis in November and December and February. It occurs rather abundantly in Venezuela and the Guianas.

Illustrations: Lam. Encycl. Méth. Ill. pl. 50, f. 3. 1791.

Citations: BRITISH HONDURAS: H. H. Bartlett 11,263 (M1--2); Gentle 992a (M1, N); Schipp S-130 (F, N). PANAMA: Coclé: H. Pittier 4932 (N). CUBA: Pinar del Río: Ekman 18,121 (N--2); Isla de Pinos: Ekman 12,015 (M1, N); Province undetermined: C. Wright 3742 (T--2). TRINIDAD: W. E. Broadway 9310 (I).

8. PAEPALANTHUS MELLII Moldenke, N. Am. Fl. 19: 41. 1937.

The species has been collected in anthesis in November.

Citations: MEXICO: Veracruz: C. D. Mell s.n. [Minatitlán, Nov. 28, 1928] (N--type).

13. PAEPALANTHUS MONTANUS (Britton) Moldenke, Revista Sud-am. Bot. 4: 17. 1937.

Dupatya montana Britton, Bull. Torrey Club 44: 33. 1917.

The species inhabits compact red iron ore, open places along trailsides, banks of streams, and pine woods at high

elevations, ascending to 5000 feet, and is said to be scarce and local. It has been collected in anthesis in November, December, and February.

Citations: CUBA: Oriente: Ekman 3522 (N); Shafer 4104 (N--3), 4473 (N--type & 2 isotypes), 8045 (N), 8251 (N).

11. *PAEPALANTHUS PUNGENS* Griseb. Cat. Pl. Cub. 224. 1866.

Dupatya pungens (Griseb.) Britton, Bull. Torrey Club 44: 33. 1917.

The species is found along the coast, ascending to 2300 feet, and has been collected in anthesis in May and July.

Citations: CUBA: Oriente: Ekman 2341 (N), 5709 (N).

4. *PAEPALANTHUS RETUSUS* C. Wright ex Sauv., Anal. Acad. Ci.

Habana 8: 50. 1871.

The species inhabits sandy pine woods and pinelands and is said to be "rare". It has been collected in anthesis in May.

Citations: CUBA: Pinar del Río: Ekman 12,806 (N); Province undetermined: C. Wright 3744 (T--isotype).

12. *PAEPALANTHUS RIPARIUS* Moldenke, N. Am. Fl. 19: 42--43. 1937.

The species inhabits moist banks bordering streams, ascending to 2700 feet, and has been collected in anthesis in February.

Citations: CUBA: Oriente: Shafer 4106 (N--type).

2. *PAEPALANTHUS SESLERIODES* Griseb. Cat. Pl. Cub. 224. 1866.

Dupatya seslerioides (Griseb.) Britton, in herb.

The species inhabits dry white quartz sand, sandy pine-lands and savannas, plains, pine-barrens, and the edge of clay banks of rocky rivers, and has been collected in anthesis in February, March, May, September, and December.

Citations: CUBA: Pinar del Río: Britton, Britton, & Gager 6980 (N), 7131 (N), 7251 (N); Ekman 11,033 (N), 17,810 (N); León & Roca 6970 (N); Shafer 10,882 (N--2), 10,956 (N); C. Wright 3234 (T--2 isotypes); Isla de Pinos: Britton, Britton & Wilson 14,225 (N); Britton & Wilson 14,319 (N), 15,689 (N); Jennings 338 (N); Oriente: Shafer 4093 (N); C. Wright 748 (N).

10. *PAEPALANTHUS TUERCKHEIMII* Ruhl. in Urb. Symb. Ant. 7: 173. 1912.

The species inhabits pine woods, ascending to 6800 feet, and has been collected in anthesis in September.

Citations: HISPANIOLA: Dominican Republic: Chardon 28 (N); Türckheim 3327 (N--isotype).

SYNGONANTHUS Ruhl. in Urb. Symb. Ant. 1: 487. 1900.

The following subgenera of Paepalanthus as considered in earlier works, belong here: Thyrsocephalus Körn. in Mart. Fl. Bras. 3¹: 429. 1863; Eulepis Bong., Mém. Acad. Sr.-Pétersb. Sci. Math., sér. 6, 1: 618 & 635. 1831; Andraspidopsis Körn., op. cit. 439; Pailocephalus Körn., op. cit. 451, in part; and Carphocephalus Körn., op. cit. 465.

A genus of about 160 species, mostly of tropical America; a few in tropical Africa.

2. SYNGONANTHUS ANDROSACEUS (Griseb.) Ruhl. in Urb. Symb. Ant. 1: 488. 1900.

Paepalanthus androsaceus Griseb. Cat. Pl. Cub. 225. 1866; Paepalanthus androsaceus var. flavescens Griseb. Cat. Pl. Cub. 225. 1866.

The species inhabits moist sand, sandy pastures and pine-lands, wet sandy savannas, roadsides, and the margins of railroad tracks, and has been collected in anthesis in January and April. The type collection of Paepalanthus androsaceus var. flavescens is C. Wright 3236.

Citations: CUBA: Pinar del Río: Ekman 10,792 (N); León 15,946 (N); Shafer 11,784 (N); Van Hermann 570 (N); C. Wright 749 (N), 3235 (T--isotype), 3236 (N, T).

7. SYNGONANTHUS BARTLETTII Moldenke, sp. nov.

Herba parva; foliis caespitosis 3--12 mm. longis valde recurvatis angustissimis; pedunculis solitariis vel paucis pilosis, pilis longis valde patentibus; bracteolis hyalinis.

Very small herb, 2--7 cm. tall; leaves caespitose, linear, dark-olivaceous, conspicuously recurved and appressed to the ground, 3--12 mm. long, about 0.5 mm. wide, blunt at apex, glabrate or very obscurely puberulent on both surfaces; sheaths closely appressed, conspicuously surpassing the leaves, conspicuously pilose with long wide-spreading (hirsute) hairs, sharply acute or acuminate at apex; peduncles solitary or few, very slender, obscurely sulcate, slightly twisted, conspicuously pilose throughout with elongated hirsute wide-spreading hairs like the sheaths; heads solitary, 2--5 mm. wide; involucrel bractlets hyaline, completely colorless throughout, elliptic-lanceolate, sharply acute or acuminate at apex, glabrous; staminate florets: pedicels about 0.5 mm. long, very densely long-tomentose at base; sepals 3, elliptic-obovate, 1--1.125 mm. long, free, hyaline, acute at apex, cuneate-narrowed at base; petals very hyaline, closely connate, forming a very narrow tube; pistillate florets: pedicels about 0.5 mm. long; sepals free, lanceolate-ovate, about 1.5 mm. long, acuminate at apex, not ciliate on the margins; petals linear-ob lanceolate, very narrow, about half as wide as the sepals, connate by

their margins.

The type of this species was collected by Dr. Harley Harris Bartlett (No. 11,670) -- in whose honor it is named -- on a flat wet upland at Mountain Pine Ridge, El Cayo District, British Honduras, on February 22, 1931, and is deposited in the herbarium of the University of Michigan. The species also inhabits pine ridges and has been collected in anthesis in January and February. It apparently grows in company with Paepalanthus Lamareckii, since H. H. Bartlett 11,263 originally contained a mixture of these two species, the new species being here regarded as No. 11,263a.

BRITISH HONDURAS: H. H. Bartlett 11,263a (M1--2, N), 11,670 (M1--type & isotype, N--fragment of isotype).

10. SYNGONANTHUS CAULESCENS (Poir.) Ruhl. in Engl. Pflanzenreich 4³⁰: 267. 1903.

Eriocaulon caulescens Poir. in Lam. Encycl. Méth. Suppl. 3: 162. 1813; Eriocaulon splendens Bong., Mém. Acad. St.-Pétersb. Sci. Math., sér. 6, 1: 633, pl. 66. 1831; Paepalanthus caulescens (Poir.) Kunth, Enum. Pl. 3: 537. 1841; Paepalanthus surinamensis Miq., Linnaea 19: 126. 1847; Paepalanthus procerus Klotzsch in Schomb. Reise in Br. Guian. 3: 1115. 1848; Eriocaulon surinamense Miq. ex Steud. Syn. Pl. Cyp. 2: 275. 1855; Eriocaulon geraense Steud. Syn. Pl. Cyp. 2: 276. 1855; Eriocaulon simillimum Steud. Syn. Pl. Cyp. 2: 277. 1855; Eriocaulon subuncinatum Steud. Syn. Pl. Cyp. 2: 277. 1855; Paepalanthus splendens (Bong.) Mart. ex Körn. in Mart. Fl. Bras. 3: 466. 1863; Dupatya caulescens (Poir.) Kuntze, Rev. Gen. Pl. 2: 745. 1891.

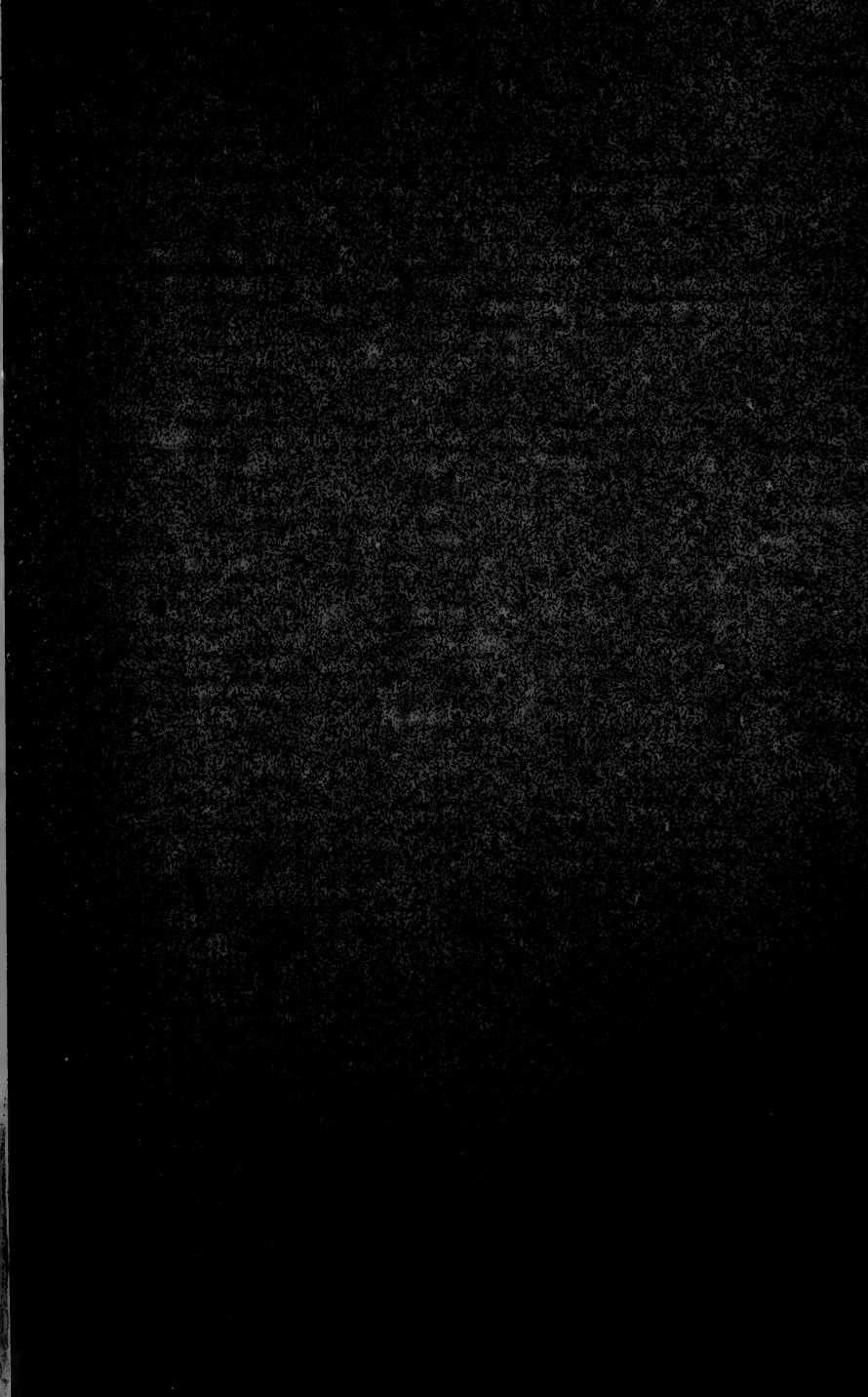
The species ascends to over 3300 feet and has been collected in anthesis in February.

Citations: COSTA RICA: Province undetermined: H. Pittier s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 11,043] (N).

1. SYNGONANTHUS FLAVIDULUS (Michx.) Ruhl. in Engl. Pflanzenreich 4³⁰: 256. 1903.

Eriocaulon flavidulum Michx. Fl. Bor. Am. 2: 166. 1803; ?Eriocaulon spathaceum Raf. Atl. Journ. 121. 1832; Paepalanthus flavidulus (Michx.) Kunth, Enum. Pl. 3: 532. 1841; Paepalanthus flavidus Kunth ex A. Gray, Man. Bot. North. U. S., ed. 2, 489, sphalm. 1856; Eriocaulon flavidum Michx. ex A. Gray, Man. Bot. North. U. S., ed. 2, 489, in syn., sphalm. 1856; Dupatya flavidula (Michx.) Kuntze, Rev. Gen. Pl. 2: 745. 1891.

The species inhabits low and wet sandy pinelands, margins of sandhill ponds, bogs, wet scrub-land, prairies, low and sandy pine-barrens, wet sandy ditches, moist sandy soil, and the borders of ponds.



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

November, 1939

No. 10

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Published by H. A. Gleason and Harold N. Moldenke

The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance.

Vol. I, number 9, was issued January 31, 1939



NEW OR OTHERWISE NOTEWORTHY PLANTS FROM MEXICO AND CENTRAL
AMERICA (a)

C. L. Lundell

PIPER MAYANUM Lundell, sp. nov.

Arbor parva, ca. 4 m. alta, 6.5 cm. diam., ramulis et petiolis villosa-tomentosis; folia chartacea, petiolo 3--5.5 cm. longo, alato; lamina chartacea, oblongo-ovata, 23--50 cm. longa, 12.5--24.5 cm. lata, apice abrupte acuminata, acumine obtusa, basi inaequilateraliter auriculata sinu laterali, supra glabra, punctata, subtus minute villosa, pinnatinervi, venis circiter 7 vel 9, subtus villosa-tomentosis; spicae usque ad 43.5 cm. longae, 0.7 cm. crassae, pedunculo usque ad 10.5 cm. longo. -- BRITISH HONDURAS: Stann Creek District, Middlesex, in high ridge forest on hill top, June 12, 1939, Percy H. Gentle 2866 (type in University of Michigan Herbarium). -- P. mayanum closely resembles P. hians Trel. of Costa Rica, a species with much coarser pubescence, subobovate-oblong leaves, open basal leaf sinus, and spikes only 18 cm. long. In P. mayanum the leaf sinus is closed by the strongly overlapping lobes.

TREMA STRIGILLOSA Lundell, sp. nov.

Arbor 8-metralis, 12.5 cm. diam., erecta; ramulis puberulis et parce hirsutis; folia petiolata, petiolo 7.5--10 mm. longo, canaliculato; stipulae ovato-lanceolatae, ca. 3 mm. longae, acuminatae; lamina lanceolata vel oblongo-lanceolata, 7.5--10 cm. longa, 2--3.1 cm. lata, apice caudato-acuminata, basi late rotundata, subaequali, inconspicue crenulato-serrulata, costa et venis supra impressis, subtus elevatis, supra scabrida, subtus minute strigillosa; cymae ♀ usque ad 2 cm. longae, puberulae; calyx breviter stipitatus; sepala puberula, inaequalia, lanceolata, 1--2 mm. longa, ciliata; ovarium glabrum; stigma rufo-villoso, lobis divaricatis; fructus ignotus. -- BRITISH HONDURAS: Stann Creek District, Middlesex, alt. about 60 m., in secondary forest; flowers cream colored, faintly perfumed; Nov. 11, 1929, W. A. Schipp 439 (type in the University of Michigan Herbarium). -- The narrowly lanceolate unequal sepals 1 to 2 mm. long and the leaf blades rounded at base and minutely strigillose distinguish T. strigillosa. T. floridana and T. micrantha, the other two species of the peninsula, have ovate equal sepals about 1 mm. long, leaf blades cordate or subcordate at base, and under surface of leaf with spreading pubescence.

PHYLLANTHUS ANTILLANUS (Adr. Jussieu) Muell. Arg. var. *HYPO-*

MALACUS (Standl.) Lundell, comb. nov.

Phyllanthus nobilis (L. f.) Muell. Arg. var. hypomalacus Standl., Carnegie Inst. Wash. Publ. 461: 68. 1935.

HIPPOCRATEA AUSTIN-SMITHII Lundell, sp. nov.

Frutex scandens; ramuli subteretes, patentes, hornotini viridescentes, glabri; folia glabra, membranacea, utrinque viridia, petiolata, petiolo supra sulcato, 4--8 mm. longo, gracili; lamina lanceolata, 6--10.5 cm. longa, 2--3.8 cm. lata, apice acuminata, acumine obtusiusculo, basi cuneata, subintegra, venis lateralibus, utroque latere 4--6, utrinque conspicue prominulo-reticulata; cymae axillares, glabrae, pauciflorae, 1.5--2.5 cm. longae (pedunculo incluso), pedicellis ultimis usque ad 2 mm. longis; flores ad 5 mm. lati; calyx stipitatus; sepala 5, depresso-ovata vel rotundata, ciliolata, usque ad 0.7 mm. longa; petala 5, late ovato-elliptica, ca. 2 mm. longa, glabra, subintegra; discus carnosus, annularis vel subcupularis; stamina 3; carpidia desunt. -- COSTA RICA: Province Alajuela, Canton San Carlos, Villa Guesada, alt. 850 m., in rain forest, a woody vine climbing 5 m., Feb. 28, 1939, Austin Smith H-1725 (type in the University of Michigan Herbarium).

HIPPOCRATEA LANCIFOLIA Lundell, sp. nov.

Frutex alte scandens, ramulis glabris, atrorubris, novellis quadrangularibus; folia glabra, petiolata, petiolo 2.5--3.5 mm. longo, canaliculato; lamina subcoriacea, lanceolata vel anguste elliptico-oblonga, 3.5--7.3 cm. longa, 1.7--3.3 cm. lata, apice obtuse acuminata vel obtusa, basi acutiuscula, repanda, venis lateralibus utroque latere 4--6, venulis remote reticulatis; infructescentiae glabrae; carpidia 3, complanata, ovata vel elliptica, 3--4.8 cm. longa, 2--2.5 cm. lata, apice late obtusa, basi rotundata, crasse coriacea, nervosa. -- BRITISH HONDURAS: Stann Creek District, Sittes River, along river bank in shade, March 20, 1930, W. A. Schipp 715 (type in the University of Michigan Herbarium). -- The ovate or elliptic strongly veined capsules and the small subcoriaceous openly reticulated leaves characterize H. lancifolia, a relative of H. celestroides H.B.K.

DOLIOCARPUS CORIACEUS (Mart. & Zucc.) Gilg.

Pinzona coriacea Mart. & Zucc. -- BRITISH HONDURAS: Stann Creek District, Middlesex, a woody vine in high ridge on hillside, July 2, 1939, Percy H. Gentle 2892, fruits. -- Apparently this species has been known previously only from equatorial Brazil.

EUGENIA COCQUERICOTENSIS Lundell, Bull. Torrey Bot. Club 64: 554. 1937.

BRITISH HONDURAS: El Cayo District, on hill top opposite Vaca, a tree 8 in. diam., flowers white, April 30, 1938, Percy H. Gentle 2533; vernacular name "female boy Job". -- From the type (Lundell 4090) in the University of Michigan Herbarium, this collection differs slightly in having pedicels up to 2.5 mm. long and somewhat larger, less conspicuously veined leaves.

EUGENIA GENTLEI Lundell, Carnegie Inst. Wash. Publ. 478: 216. 1937.

BRITISH HONDURAS: Belize District, one mile north of Gracie Rock on the Sibun River, in pine ridge, Sept. 21, 1936, Hugh O'Neill 8761. Stann Creek District, Melinda Pine Ridge, in pine lands, a small tree, flowers white, Jan. 25, 1937, Percy H. Gentle 1887. -- From these additional collections the original description is amplified as follows:

Flowers sessile, solitary or geminate, borne on older branchlets; calyx glabrous, limb 4-lobed, the lobes oblong or ovate-oblong, 2 to 3.5 mm. long, rounded, ciliate, sparsely and rather finely glandular-punctate; petals obovate, 5 to 7 mm. long, 4 to 4.5 mm. wide, rounded, long-ciliate, glabrous otherwise; stamens numerous; style glabrous; ovary 2-celled; mature fruits unknown.

ASPIDOSPERMA MATUDAI Lundell, sp. nov.

Arbor 20-metralis, 60 cm. diam.; ramulis parce lepidotis; folia alterna, firme membranacea, glabra, longe petiolata, petiolo 3--3.8 cm. longo; lamina oblonga, 12--17.5 cm. longa, 4--6 cm. lata, apice acuta vel obtusa, raro acuminata, basi late cuneata, utrinque prominenter costata, multivenosa; inflorescentiae 5.5--10 cm. longae (pedunculo incluso), longe pedunculatae, pedunculis lepidotis, ramulis et pedicellis adpresse albi-tomentulosis; pedicellis 3 mm. longis vel minoribus; calyx albi-tomentulosus, lobis lanceolatis, ca. 2.6 mm. longis; corolla ca. 7 mm. longa, extus glabra, tubo urceolato, ca. 4 mm. longo, intus sub apice puberulo, lobis subulatis, ca. 3 mm. longis; ovarium glabrum. -- MEXICO: Chiapas, Escuintla, January, 1938, Eizi Matuda 2030 (type in the University of Michigan Herbarium); vernacular name "chichi". -- A. Matudai differs notably from the other Mexican and Central American species in its large thin leaves with remarkably long slender petioles. It appears to be related closely to A. cruentum Woodson, which is known only from fruiting material.

MARKEA CAMPANULATA (Donn. Sm.) Lundell, comb. nov.

Merinthopodium campanulatum Donn. Sm., Bot. Gaz. 47: 257. 1909.

MARKEA INTERNEXA (Blake) Lundell, comb. nov.

Merinthopodium internexum Blake, Contrib. Gray Herb. 52: 85. 1917.

MARKEA UNIFLORA Lundell, sp. nov.

Frutex scandens; ramulis angulatis, rugulosis, hirsutis, crassiusculis; folia alterna, petiolata, petiolo sulcato, 3--15 mm. longo; lamina chartacea vel subcoriacea, obovata vel elliptica, 4--13 cm. longa, 1.7--6.8 cm. lata, apice obtusiuscula vel abrupte breviterque subacuminata, basi obtusiuscula in petiolum attenuata, integerrima, subconcolor, supra glabra, subtus parce hirsuta, venis lateralibus 5--8-jugis, supra impressis, subtus prominentibus; flores solitarii; pedicelli graciles, parce hirsuti, 4.5--7 cm. longi; sepala 5, ovato-lanceolata, 3.7--4.2 cm. longa, basi usque ad 1.8 cm. lata, obscure trinervia, glabra; corolla usque ad 7.5 cm. longa, parte tubiformi ca. 2 cm. longa, parte campaniformi ca. 3.5 cm. longa, lobis 5, ovatis, ca. 2 cm. longis, rotundatis; filamenta ad basin villosa; antherae exsertae, ca. 1.4 cm. longae; stylus ca. 6 cm. longus; ovarium triloculare, multiovulatum, glabrum. -- MEXICO: Chiapas, Volcan de Tacana, alt. 2800 m., March 27, 1939, Eizi Matuda 2816 (type in the University of Michigan Herbarium). -- M. uniflora is a close relative of M. campanulata (Donn. Sm.) Lundell, a poorly known species described from incomplete material. The flowers of M. uniflora, solitary and apparently terminal, are considerably smaller than those described for M. campanulata.

(a) Papers from the Herbarium of the University of Michigan.

FOUR CENTRAL AMERICAN MELASTOMES

H. A. Gleason

CENTRADENIA GRANDIFOLIA var. BREVISEPALA Gleason, var. nov.

Folia basi uno latere anguste cuneata altero late cuneata, secus venas albo-vittata. Sepala breviter truncata margine minute ciliata.

Type, Stuart 15, collected at Finca Pansemala, Dept. Atlix, Guatemala, in the herbarium of the University of Michigan. In the typical element of the species, the sepals are ovate-triangular and 1.5--2 mm. long.

LEANDRA LEPIDOTA Gleason, sp. nov.

Frutex, caulibus junioribus, petiolis, venis, inflorescentia et floribus canescenti-lepidotis. Folia magna oblongo-obovata 5-pli-nervia. Hypanthium 10-sulcatum. Calycis limbus subhyalinus ad anthesin in lobos irregulares fissus; dentes exteriores lanceolati erecti. Petala lanceolata acuta. Antherae isomorphae semi-obovatae 2-loculares, poris 2 dehiscentes; connectivum in appendicem lanceolatam productum.

Branching shrub 4 m. high, the younger stems, petioles, principal leaf-veins, inflorescence and flowers densely gray-lepidote with lanceolate scales 0.2 mm. long. Petioles stout, 1--3 cm. long. Blades unequal in each pair, obovate-oblong, 18--32 cm. long, 9--15 cm. wide, abruptly short-acuminate to an obtuse and mucronulate tip, obscurely repand, broadly cuneate at base, 5-pli-nerved, the innermost primaries alternate, 3--7 cm. from the base. Veins plane above, elevated beneath; secondaries nearly straight, 4--6 mm. apart; tertiaries prominulous beneath, obsolete above. Inflorescence terminal, the straight axis bearing several pairs of short lateral branches 5--8 mm. long; flowers 5-merous, sessile in terminal glomerules, subtended by lanceolate bracts 1.5--2 mm. long. Hypanthium subglobose, thick-walled, 2.8 mm. long to the torus, deeply but roundly 10-sulcate. Calyx-tube erect, 0.6 mm. long; calyx-limb very thin and diaphanous, about 1.1 mm. long, sparsely stellate, splitting at anthesis into irregular triangular lobes; exterior teeth erect, lanceolate, acute, 1.6 mm. long. Petals erect, 4.5 mm. long, more or less involute distally, the actual apex incurved, 0.2 mm. long, the exterior tooth erect, 0.4 mm. long. Filaments erect, glabrous, flat, 2.4 mm. long. Anthers radially flattened, 1.6 mm. long; connective prolonged into a basal appendage 0.5 mm. long, lanceolate in the epipetalous series, obscurely 3-lobed in the episeptalous. Ovary wholly inferior, 5-celled, its subconic summit glabrous; style glabrous, slender, 3 mm. long; stigma truncate.

In rain forest at Villa Quesada, Prov. Alajuela, Costa Rica, alt. 240 meters, Austin Smith H-1735 (type in the Britton Herbarium at The New York Botanical Garden). Related to L. lasiopetala Cogn., also of Costa Rica, which is glandular-pubescent rather than lepidote.

MICONIA PANAMENSIS Gleason, sp. nov.

Sect. Eumiconia: Rami juniores minutissime furfuracei demum glabrescentes. Petioli crassi 4 mm. longi. Laminae ovato-lanceolatae, usque ad 16 cm. longae 6 cm. latae, longe acuminatae, inferne rotundatae ad basin cordulatam, 3-nerviae, supra glabrae subtus ad venas majores minutissime

stellatae. Inflorescentia pyramidalis, ramis gracilibus inferioribus elongatis; bracteolae triangulares minimae. Flores sessiles 5-meri. Hypanthium campanulatum, ad torum 2 mm. longum, stellato-furfuraceum. Calycis tubus 0.4 mm. longus suberectus; sepala late triangularia 0.6 mm. longa; dentes exteriores conici vix prominuli. Petala alba elliptica equilatera integra 2.6 mm. longa. Stamina dimorpha. Filamenta gracilia glabri 3.5 vel 2.7 mm. longa. Antherae lineares subrectae 2-loculares poro ventrali-terminali dehiscentes, 3.4--3.7 vel 2.6--2.8 mm. longae; connectivum in ser. ext. 0.8 mm. infra thecas productum, in lobos erosos 2 laterales deflexos 1 dorsalem divisum, in ser. int. 0.6 mm. productum, in lobos parvos integros 2 laterales 1 dorsalem productum. Ovarium 3-loculare, semi-inferum, ovulis in quoque loculo paucis adscendentibus; stylus glaber 6 mm. longus; stigma capitellatum.

Type, Wedel 6, from Maccaw Hill, Prov. Bocas del Toro, Panama, in the Britton Herbarium. Related to a small group of South American species, of which M. Chamissois Naud. is best known, in which the connective of the outer series of stamens is expanded into a large cordate structure. Within this group, our species most resembles the Peruvian M. longiracemosa Gl., which (as also M. Chamissois) has plinnerved leaves narrowed to the base.

BLAKEA CALYCOSA Gleason, sp. nov.

Frutex epiphyticus, ramis supremis obscure furfuraceis. Petioli crassi, 18--40 mm. longi tenuiter furfuracei. Laminae membranaceae ellipticae, usque ad 24 cm. longae 9 cm. latae, breviter caudato-acuminatae, basi rotundatae, subpeltatae, 3-nerviae jugo submarginali neglecto, supra glabrae, subtus ad venas furfuraceae; venae secundariae alternatim validae debiles. Flores 6-meri, pedicellis 5 mm. longis. Bractee exteriores subpatulae rotundae, extus pubescentes, 11 mm. longae 14 mm. latae, 4 mm. connatae, 3-nerviae, intra glebrae; interiores basi hypanthium amplexantes glabrae, 5 mm. connatae, superne patulae foliaceae, limbo lunato medio 5--6 mm. longo. Hypanthium hemisphaericum 5 mm. altum 8 mm. latum glabrum. Sepala horizontaliter patula ovato-oblonga, a toro 6--7 mm. longa, glabra, apice rotundata appendiculata, appendice foliaceae valde reflexa pubescente 7 mm. longa. Petala rosea anathulata obtusa basi late unguiculata, 22 mm. longa, multinervia, utrinque verrucosa, latere uno sparse villosa-ciliata, altero minutissime reflexo-ciliata. Filamenta lata recta 5 mm. longa. Antherae late ellipticae obtusae, 6 mm. longae, poris 2 terminalibus, connectivo in carinam dorsalem elevato, basi in calcarem late conicum obtusum 2 mm. longum productum. Ovarium inferum 6-loculare, summo depressum circa styli basin elevatum. Stylus 14 mm.

longus infra medium glanduloso-hirsutulus; stigma punctiforme.

Type, Allen 1788, from the vicinity of El Valle, Prov. de Coclé, Panama, alt. 600--1000 m., in the Britton Herbarium. In the foliaceous reflexed appendages of the sepals it is quite unlike any other known species of Blakea.

ADDITIONAL NOTES ON THE ERIOCAULACEAE -- II

Harold N. Moldenke

The following notes constitute a continuation of the notes published by me in Phytologia 1: 309--336.

1. SYNGONANTHUS FLAVIDULUS (Michx.) Ruhl.

The species has been collected in anthesis from February to June and in September. Curiously, Ruhland placed the name Eriocaulon flavidulum Michx. in two places: (1) under Syngonanthus flavidulus, for which it is the name-bringing synonym, and also (2) as a valid species of Eriocaulon [Engl. Pflanzenreich 430: 33 & 256. 1903]. For the latter he gives as distribution "along banks of streams from Pennsylvania to the Carolinas". Just what he meant by this latter species is doubtful.

Illustrations: Britton & Br. Ill. Fl., ed. 1, 1: f. 902. 1896; ed. 2, 1: 455, f. 1144. 1913; Small, Man. SE. Fl. 257. 1933.

Citations: NORTH or SOUTH CAROLINA: County undetermined: Michaux s.n. (N--photo of type, P--type). SOUTH CAROLINA: Florence Co.: Ravenel s.n. [Florence, 1879] (Mi, T); Beaufort Co.: J. H. Mellichamp s.n. [Bluffton] (Be). GEORGIA: Charlton Co.: F. Harper s.n. [Floyd's Island] (N); J. S. Harper 161 (N); Emanuel Co.: R. M. Harper 803 (N). FLORIDA: Walton Co.: Mohr s.n. [De Funiac Springs, May 12, 1892] (C); Franklin Co.: Biltmore Herb. 3162a (N); Leon Co.: Berg s.n. [Near Tallahassee] (N); Jefferson Co.: Lighthipe s.n. [Monticello, March, 1891] (N); Alachua Co.: S. J. Knight 2 (C); O'Neill 611 (I), 652 (I); Duval Co.: Curtiss 4140 (C); T. Hogg 8 (C); Lighthipe 173 (N); Clay Co.: W. M. Canby s.n. [Hibernia, March, 1869] (N); C. Skottsberg s.n. [Below Jacksonville & Atlantic Beach] (Go); St. Johns Co.: M. C. Reynolds s.n. [Mar.--July, 1875] (C); Lake Co.: A. S. Hitchcock s.n. [Eustis, June--July, 1894] (I); Nash 143 (C, Mi), 1944 (C); Volusia Co.: Lugren s.n. [Volusia] (N); Orange Co.: F. S. Blanton 6491 (I); Huger s.n. [Winter Park, April, 1900]

(N); E. J. Palmer 38,324 (N); Pasco Co.: O'Neill 7788 (I), 7875 (I), s.n. [Fish Lake, Feb. 20, 1926] (I), s.n. [Big Cypress Swamp, April, 1927] (I); Hillsboro Co.: Leavenworth s.n. [Tampa Bay] (T); Pinellas Co.: Tracy 6642 (N--2); 7588 (N); Polk Co.: Topping 2609 (N); Brevard Co.: Edw. Palmer 580 (Bc); Manatee Co.: Garber s.n. [Manatee, Apr. 1876] (C); Tracy 6643 (N); Lee Co.: H. N. Moldenke 688 (N), 940 (N); Sheehan s.n. [Boakum Place, March 6, 1919] (N); J. P. Standley 10 (N); County undetermined: Chapman 182 (T), s.n. (C, T--2). ALABAMA: Mobile Co.: Pennell 4509 (N). LOCALITY OF COLLECTION UNDETERMINED: Gibbes s.n. [Sept. 1833] (N).

8. SYNGONANTHUS HONDURENSIS Moldenke, sp. nov.

Herba parva; foliis caespitosis patentibus 1--1.6 cm. longis linearibus; pedunculis 4 vel 5 adpresso-pubescentibus, vaginis quam foliis brevioribus dense breviterque pubescentibus; bracteolis ad mediam olivaceis, unque ad 2.5 mm. longis, glabris.

Small herb, 6--7 cm. tall; leaves caespitose, linear, olivaceous, patent, not noticeably recurved nor appressed, 1--1.6 cm. long, about 1 mm. wide, rather blunt at apex, glabrate on both surfaces; sheaths closely appressed, shorter than the leaves, densely short-pubescent, acuminate at apex; peduncles 4 or 5 per plant, very slender, obscurely sulcate, slightly twisted, conspicuously white-pilose throughout with usually closely appressed hairs or sometimes also a few spreading ones toward the apex; heads solitary, 2--6 mm. wide; involucrel bractlets elliptic, membranous, olivaceous in a median band from apex to base, gray and scarious at the margins, 1.6--2.5 mm. long, about 0.875 mm. wide, regularly narrowed from the middle to the sharply acute or acuminate apex, glabrous, not ciliate; staminate florets: pedicels about 1.25 mm. long, glabrous; sepals 3, free, membranous, with an olivaceous median band, elliptic, about 1.125 mm. long, sharply acute at apex, glabrous, not ciliate; petals united to form a tube about as long as the sepals, olivaceous throughout to about the middle, olivaceous only along the midrib above, glabrous; pistillate florets: pedicels about 1 mm. long, densely long-villous at base with white hairs longer than the pedicel; sepals 3, free, membranous, with an olivaceous median band, lanceolate, about 1.875 mm. long, sharply acute at apex, long-ciliate along the margins, glabrous; petals loosely connate along the margins, narrow-oblong, slightly shorter than the sepals, densely long-villous on the outer surface with white ascending hairs.

The type of this species was collected by Rev. Hugh O'Neill (No. 8543) in a tropical pineland, 3 miles west of Boomtown, British Honduras, on August 23, 1936, and is deposited in the herbarium of the University of Michigan. It

was mixed with No. 8543a, Syngonanthus Oneillii, in the original collection.

BRITISH HONDURAS: O'Neill 8543 (I--isotype, M1--type, N--isotype).

4. SYNGONANTHUS INSULARIS Moldenke, N. Am. Fl. 19: 45. 1937.

The species inhabits white sand and has been collected in anthesis in February.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wilson 14,162 (N--type); Ekman 12,095 (M1).

3. SYNGONANTHUS LAGOPODIODES (Griseb.) Ruhl. in Urb. Symb. Ant. 1: 489. 1900.

Paepalanthus lagopodioides Griseb. Cat. Pl. Cub. 225. 1866; Paepalanthus lagospodioides Griseb. ex Sauv. Fl. Cub. 165, sphalm. 1871.

The species inhabits sandy and moist pinelands, plains, moist savannas, streamsides, moist or wet sand along railroad tracks, white sand, or wet black soil, and has been collected in anthesis from December to March, May, August, and September.

Citations: CUBA: Pinar del Río: Britton, Britton, Earle, & Gager 6488 (N); Britton, Britton, & Gager 7058 (N), 7254 (N); Ekman 10,823 (M1, N), 11,061 (M1, N), 11,145 (M1); León & Roca 6930 (N); Shafer 10,866 (N--2), 10,995 (N--2), 11,782 (N); C. Wright 3237 (N--isotype, T--isotype), 3238 (N); Isla de Pinos: Britton, Britton, & Wilson 14,217 (N), 14,223 (N), 15,787 (N), 15,789 (N); Ekman 11,973 (N), 12,071 (N).

9. SYNGONANTHUS LUNDELLIANUS Moldenke, sp. nov.

Herba parva; foliis caespitosis 1--1.5 cm. longis patentibus linearibus; pedunculis pluribus pubescentibus, pilis hirsuto-patentibus, vaginis quam foliis longioribus, laxè longeque pilosis; bracteolis plusminus olivaceis, usque ad 8 mm. longis, villosis.

Small herb, 6.5--8.5 cm. tall; leaves caespitose, linear, olivaceous, 1--1.5 cm. long, patent, not noticeably recurved nor appressed, rather blunt at apex, appressed-puberulent on both surfaces; sheaths closely appressed, conspicuously surpassing the leaves, loosely long-pilose, acute or subacuminate at apex; peduncles numerous, very slender, few-sulcate, straight (not twisted), conspicuously pilose throughout with loosely spreading (hirsute) elongated hairs; heads solitary, 2--15 mm. wide; involucrel bractlets linear-oblong, often elongate to 8 mm. long (!), the outer ones much shorter or all much shorter, the short ones olivaceous in a median band from base to apex, the elongated ones olivaceous in several parallel bands from base to apex, acute at apex, conspicuously villous on the outer surface with long loose hirsute

capitate hairs, glabrous within; staminate florets: pedicels about 0.75 mm. long, densely long-villous-tomentose at base with white hairs longer than the pedicel; sepals 3, free, hyaline, elliptic, about 1 mm. long, acuminate at both ends, glabrous, not ciliate; petals united into a narrow hyaline glabrous tube almost as long as the sepals; pistillate florets: pedicels about 0.5 mm. long, densely long-villous with white hairs longer than the pedicel; sepals 3, free, hyaline, elliptic, about 1.625 mm. long, regularly narrowed to the acute or acuminate apex, glabrous, not ciliate; petals narrow-oblong and strap-shaped, shorter than the sepals, hyaline, appressed-villous on the back, loosely connate by their margins.

The type of this species was collected by Rev. Hugh O'Neill (No. 8546) under Quercus oleoides var. australis Trelease, Broken Ridge, 8 miles northeast of Boomtown, British Honduras, on September 17, 1936, and is deposited in the herbarium of the University of Michigan. Vivipary is so pronounced on the Catholic University isotype that young plants are actually in flower in the inflorescence-heads of the old plants! The species is named in honor of my good friend and esteemed colleague, Dr. Cyrus Longworth Lundell, who is doing such noteworthy and important work on the natural history of the Yucatán Peninsula.

BRITISH HONDURAS: O'Neill 8546 (I--isotype, Mi--type, N--isotype).

6. SYNGONANTHUS ONEILLII Moldenke, sp. nov.

Herba parva; foliis caespitosis 1--2.5 cm. longis plusminus recurvatis; pedunculis pluribus glabris vel subglabris; bracteolis olivaceis.

Small herb, 6--10 cm. tall; leaves caespitose, linear, olivaceous, spreading and more or less recurved, 1--2.5 cm. long, 0.5--1 mm. wide, abruptly acute at apex, glabrate on both surfaces or somewhat loosely pilose; sheaths closely appressed, equaling or shorter than the leaves, very sparsely and loosely pilose or glabrate, sharply acute or acuminate at apex; peduncles numerous, very slender, sulcate, twisted, glabrous or subglabrous throughout; heads solitary, 3--5 mm. wide; involucrel bractlets oblanceolate-elliptic, rather light-olivaceous or brownish throughout, lighter along the margins, very abruptly acute or obtuse at apex, glabrous; staminate florets: pedicels about 0.875 mm. long, glabrous except for a few long hirsute white hairs at the base surpassing the pedicel; sepals 3, 1--1.125 mm. long, oblanceolate, about 0.375 mm. wide at the widest part, glabrous, plainly cellular, hyaline, short-acuminate or sinuate-tridentate at apex, cuneate-narrowed to the base, free; petals united at the middle, free at apex and base, slightly

shorter than the sepals, olivaceous in a median band from apex to base, incurved and pilose at the very apex on the outer surface with a few black hairs; pistillate florets: pedicels about 0.75 mm. long, long-hirsute at base; sepals about 1.25 mm. long, lanceolate-ovate, acute at apex, long-ciliate on the margins toward the apex; petals narrow-oblong, connate by their margins.

The type of this species was collected by my good friend, Rev. Hugh O'Neill (No. 8548) -- in whose honor it is named -- in a tropical pineland, Boomtown, British Honduras, on September 14, 1936, and is deposited in the herbarium of the University of Michigan.

BRITISH HONDURAS: O'Neill 8543a (I, Mi), 8548 (I--iso-type, Mi--type).

The new species from British Honduras, described above, may be distinguished by means of the following artificial key:

1. Peduncles glabrous or practically so.....S. Oneillii.
1a. Peduncles conspicuously pubescent.

2. Involucral bractlets hyaline, completely colorless.....
S. Bartlettii.

2a. Involucral bractlets more or less olivaceous.

3. Sheaths shorter than the leaves, densely short-pubescent; pubescence on peduncles mostly appressed; bractlets to 2.5 mm. long, glabrous...S. hondurensis.

3a. Sheaths longer than the leaves, loosely long-pilose; pubescence on peduncles spreading; bractlets to 8 mm. long, villous.....S. Lundellianus.

5. SYNGONANTHUS WILSONII Moldenke, N. Am. Fl. 19: 45. 1937.

The species inhabits white sand and has been collected in anthesis in March.

Citations: CUBA: Isla de Pinos: Britton, Britton, & Wilson 15,789a (N--type).

TONINA Aubl. Hist. Pl. Guian. Fr. 2: 856. 1775.

Hyphydra Schreb. Gen. 666. 1791.

A monotypic genus of tropical portions of the New World.

1. TONINA FLUVIATILIS Aubl. Hist. Pl. Guian. Fr. 2: 857, pl. 330. 1775.

Hyphydra amplexicaulis Vahl, Symb. Bot. 3: 99. 1794 [accredited to Schreber by Ruhland!]; Eriocaulon amplexicaule (Vahl) Rottb. Descr. Pl. Surinam. 7, pl. 1, f. 1. 1798.

The species inhabits quiet water of marshes, swamps, ponds, and streams, and has been collected in anthesis in every month of the year.

Illustrations: Aubl. Hist. Pl. Guian. Fr. 4: pl. 330.

1775; Acta Lit. Univ. Hafn. 1: pl. 1, f. 1; Lam. Encycl. Méth. Ill. pl. 772, f. 1. 1798; Rottb. Descr. Pl. Surinam. pl. 1, f. 1. 1798; Ann. Sci. Nat. Paris, sér. 1, 13: pl. 5, f. 4. 1828; Nov. Act. Physico-med. Acad. Caes. Leopold.-Carol. Nat. Cur. 17¹: pl. 4, f. 2. 1835; Schnitzlein, Iconogr. 1: pl. 46, f. 13--19. 1845; Lindl. Veg. Kingd. 122, f. 82. 1846; Mart. Fl. Bras. 3¹: pl. 38, f. 1. 1863; Engl. & Prantl, Nat. Pflanzenfam. 2⁴: 24, f. 13. 1888; Bot. Tidsskr. 18: pl. 20, f. A. 1893; Baill. Hist. Pl. 12: 399, f. 372--374. 1894; Engl. Pflanzenreich 4³⁰: 239, f. 35. 1903.

Citations: MEXICO: Veracruz: Orcutt 3285 (F). BRITISH HONDURAS: Schipp 693 (Mi, N). COSTA RICA: San José: Skutch 2465 (Mi, N). CUBA: Pinar del Río: Acuña 10,753 (Es); Ekman 11,120 (N); Province undetermined: C. Wright 3242 (N, T).

Geographic distribution of the species and varieties of Eriocaulaceae thus far cited in these notes:

ISLE OF SKYE, IRELAND, & SCOTLAND: Eriocaulon septangulare.
SAINT PIERRE, SABLE ISLAND, & NEWFOUNDLAND: Eriocaulon septangulare.

NOVA SCOTIA: Eriocaulon septangulare [Cape Breton, Richmond, Guysborough, Halifax, Digby, & Yarmouth].

NEW BRUNSWICK: Eriocaulon septangulare [St. John].

QUEBEC: Eriocaulon septangulare [Rimouski, Temiscouata, Fortneuf, Montcalm, & Ottawa].

ONTARIO: Eriocaulon septangulare [Simcoe & St. Joseph Island].

MAINE: Eriocaulon Parkeri [Penobscot & Sagadahoc] -- E. septangulare [Penobscot, Waldo, & Mount Desert Island].

VERMONT: Eriocaulon septangulare [Addison & Orange].

NEW HAMPSHIRE: Eriocaulon septangulare [Coos, Grafton, Merrimack, Cheshire, & Hillsboro].

MASSACHUSETTS: Eriocaulon septangulare [Berkshire, Hampshire, Hampden, Essex, Middlesex, Norfolk, Plymouth, Barnstable, Dukes, & Nantucket].

CONNECTICUT: Eriocaulon Parkeri [Fairfield & New London] -- E. septangulare [Litchfield & Middlesex].

NEW YORK: Eriocaulon Parkeri [Greene, Columbia, & Rockland] -- E. septangulare [St. Lawrence, Oswego, Hamilton, Madison, Warren, Washington, Rensselaer, Steuben, Sullivan, Ulster, Dutchess, Orange, Putnam, Westchester, Queens, Nassau, & Suffolk].

PENNSYLVANIA: Eriocaulon Parkeri [Philadelphia] -- E. septangulare [Luzerne & Pike].

NEW JERSEY: Eriocaulon compressum [Burlington, Ocean, Camden, Atlantic, & Cape May] -- E. decangulare [Monmouth, Burlington, Ocean, Camden, Atlantic, Cumberland, & Cape May] -- E. Parkeri [Mercer, Monmouth, Burlington, Ocean,

Camden, Atlantic, & Cumberland] -- E. septangulare [Sussex, Morris, Ocean, Camden, & Atlantic].

DELAWARE: Eriocaulon decangulare [Sussex] -- E. Parkeri [Sussex].

MARYLAND: Eriocaulon compressum [Baltimore & Wicomico] -- E. decangulare [Prince Georges & Worcester] -- E. Parkeri [Wicomico] -- E. septangulare [Harford, Wicomico, & Worcester].

DISTRICT OF COLUMBIA: Eriocaulon decangulare.

VIRGINIA: Eriocaulon decangulare [Prince George] -- E. Parkeri [Alexandria & New Kent] -- Lachnocaulon anceps [Isle of Wight, James City, & Prince George].

NORTH CAROLINA: Eriocaulon compressum [Onslow] -- E. decangulare [Catawba, Rowan, Dare, Buncombe, Cumberland, Brunswick, & New Hanover] -- E. lineare [Henderson] -- Lachnocaulon anceps [Bladen & New Hanover] -- L. minus [Halifax & New Hanover].

SOUTH CAROLINA: Eriocaulon compressum [Lexington & Charleston] -- E. decangulare [Orangeburg] -- E. Ravenelii [Berkeley] -- Lachnocaulon anceps [Kershaw, Florence, Aiken, & Dorchester] -- Syngonanthus flavidulus [Florence & Beaufort].

GEORGIA: Eriocaulon compressum [Sumter, Bryan, & Charlton] -- E. compressum var. Harperi [Sumter & Charlton] -- E. decangulare [Columbia, Sumter, Lee, McIntosh, & Lowndes] -- E. lineare [Montgomery, Bulloch, & Lowndes] -- Lachnocaulon anceps [Richmond, Sumter, Emanuel, & Worth] -- L. Beyrichianum [Charlton] -- L. minus [Lowndes] -- Syngonanthus flavidulus [Emanuel & Charlton].

FLORIDA: Eriocaulon compressum [Duval, Clay, St. Johns, Levy, Lake, Orange, Pasco, Hillsboro, Polk, De Soto, Lee, Broward, Seminole, Dade, & Collier] -- E. compressum var. Harperi [Jackson, Washington, Franklin, Leon, Wakulla, De Soto, & Lee] -- E. decangulare [Holmes, Franklin, Leon, Duval, Marion, Highlands, Charlotte, Lake, Orange, Pasco, Hillsboro, Polk, Brevard, Manatee, Lee, Broward, & Dade] -- E. decangulare var. latifolium [Franklin] -- E. lineare [Santa Rosa, Walton, Gulf, Leon, & Pasco] -- E. Ravenelii [Broward & Dade] -- Lachnocaulon anceps [Alachua, Nassau, Duval, Clay, Lake, Okeechobee, Orange, Pasco, Hillsboro, Polk, Manatee, Seminole, & Monroe] -- L. Beyrichianum [St. Johns] -- L. eciliatum [Walton, Putnam, & Lake] -- L. Engleri [Washington, Putnam, Lake, Pasco, & Orange] -- L. floridanum [Lake] -- L. glabrum [Lee, Broward, & Dade] -- L. minus [Walton, Liberty, Leon, Clay, Lake, Volusia, Pasco, & Broward] -- Syngonanthus flavidulus [Walton, Franklin, Leon, Jefferson, Alachua, Duval, Clay, St. Johns, Lake, Volusia, Orange, Pasco, Hillsboro, Pinellas, Polk, Brevard, Manatee, & Lee].

- ALABAMA: Eriocaulon compressum [Mobile & Escambia] -- E. compressum var. Harperi [Mobile] -- E. decangulare [Mobile & Baldwin] -- E. decangulare var. latifolium [Mobile] -- E. lineare [Baldwin] -- Lachnocaulon anceps [De Kalb & Mobile] -- L. digynum [Mobile] -- Syngonanthus flavidulus [Mobile].
- MISSISSIPPI: Eriocaulon compressum var. Harperi [Harrison] -- E. decangulare [Harrison] -- Lachnocaulon anceps [Harrison & Jackson] -- L. digynum [Harrison].
- INDIANA: Eriocaulon septangulare [Steuben & Whitley].
- MICHIGAN: Eriocaulon septangulare [Isle Royale, Houghton, Iron, Marquette, Alger, Chippewa, Cheboygan, Presque Isle, Mason, Gratiot, & Cass].
- WISCONSIN: Eriocaulon septangulare [Burnett & Calumet].
- MINNESOTA: Eriocaulon septangulare [St. Louis, Cook, Crow Wing, & Chisago].
- OKLAHOMA: Eriocaulon Körnickianum [Pushtamaha].
- ARKANSAS: Eriocaulon Körnickianum [Benton & Logan].
- LOUISIANA: Eriocaulon compressum [Calcasieu] -- E. compressum var. Harperi [St. Tammany] -- E. decangulare [Natchitoches, Calcasieu, St. Tammany, & Orleans] -- Lachnocaulon anceps [St. Tammany & Orleans].
- TEXAS: Eriocaulon decangulare [Smith & Waller] -- E. texense [Smith] -- Lachnocaulon anceps [Hardin].
- CALIFORNIA: Eriocaulon microcephalum [Kern].
- MEXICO: Eriocaulon Benthani [Chihuahua, Zacarecas, Jalisco, & Mexico] -- E. bilobatum [Jalisco] -- E. Ehrenbergianum [Chihuahua, Nayarit, Jalisco, Hidalgo, Mexico, Federal District, & Oaxaca] -- E. guadalajarensis [Jalisco] -- E. mexicanum [Jalisco] -- E. microcephalum [Mexico & Puebla] -- E. Palmeri [Durango] -- E. Pringlei [Chihuahua] -- E. Schiedeana [Jalisco] -- E. tepicanum [Nayarit] -- Paepalanthus chiapensis [Chiapas] -- P. Mellii [Veracruz] -- Tonina fluviatilis [Veracruz].
- BRITISH HONDURAS: Eriocaulon fuliginosum -- E. Kinlochii -- E. Schippii -- E. Williamsii -- Paepalanthus Gentlei -- P. Lamarckii -- Syngonanthus Bartlettii -- S. hondurensis -- S. Lundellianus -- S. Oneillii -- Tonina fluviatilis.
- GUATEMALA: Eriocaulon Ehrenbergianum [Chimaltenango].
- COSTA RICA: Eriocaulon microcephalum [San José] -- Paepalanthus costaricensis [San José] -- Syngonanthus caulescens -- Tonina fluviatilis [San José].
- PANAMA: Eriocaulon panamense [Chiriquí] -- E. Seemannii [Canal Zone & Panamá] -- E. Williamsii [Coclé] -- Paepalanthus Lamarckii [Coclé].
- CUBA: Eriocaulon arenicola [Isla de Pinos] -- E. cubense [Isla de Pinos] -- E. dioecum [Pinar del Río] -- E. echinospermoides [Santa Clara] -- E. echinospermum [Pinar del Río] -- E. Seemannii [Pinar del Río] -- E. fuliginosum

[Pinar del Río, Isla de Pinos, Santa Clara, & Oriente] -- E. fusiforme [Isla de Pinos] -- E. heteropetalum [Pinar del Río] -- E. insulare [Pinar del Río & Isla de Pinos] -- E. lacustre [Pinar del Río] -- E. melanocephalum [Oriente] -- E. melanocephalum var. longipes [Pinar del Río] -- E. minutissimum [Pinar del Río] -- E. miserrimum [Isla de Pinos] -- E. olivaceum [Isla de Pinos] -- E. ovoideum [Isla de Pinos] -- E. pinarense [Pinar del Río & Isla de Pinos] -- E. pseudocompressum [Pinar del Río] -- E. sclerocephalum [Isla de Pinos] -- E. sigmoideum -- Lachnocaulon anceps [Isla de Pinos] -- L. cubense [Santa Clara] -- L. Ekmannii [Pinar del Río] -- Paepalanthus alsinoides [Pinar del Río] -- P. alsinoides var. minimus [Pinar del Río & Isla de Pinos] -- P. Lamarckii [Pinar del Río & Isla de Pinos] -- P. montanus [Oriente] -- P. pungens [Oriente] -- P. retusus [Pinar del Río] -- P. riparius [Oriente] -- P. seslerioides [Pinar del Río, Isla de Pinos, & Oriente] -- Syngonanthus androsaceus [Pinar del Río] -- S. insularis [Isla de Pinos] -- S. lagopodioides [Pinar del Río & Isla de Pinos] -- S. Wilsonii [Isla de Pinos] -- Tonina fluviatilis [Pinar del Río].

HISPANIOLA: Paepalanthus domingensis [Dominican Republic] -- P. Tuerckheimii [Dominican Republic].

TRINIDAD: Paepalanthus Lamarckii.

ECUADOR: Eriocaulon microcephalum [Carchi & Pichincha].

An alphabetized list of citations of herbarium material in the foregoing notes:

Acuña 10,753 (Tonina fluviatilis); Allen, T. F., s.n. [Pine barrens, June, 1871] (Eriocaulon compressum), s.n. [1870] (Eriocaulon decangulare); Allison 207 (Eriocaulon decangulare); Ames, G. L., s.n. [Mt. Luber, W., Sept. 1857] (Eriocaulon septangulare); André K.1757 (Eriocaulon microcephalum); Anselm 435 (Eriocaulon septangulare); Arsène 130 (Eriocaulon septangulare); Austin s.n. [East Mass., 1860] (Eriocaulon septangulare).

Bailey, Lt., s.n. [West Point] (Eriocaulon septangulare); Baker, C. F., 780 (Eriocaulon decangulare), 841 (Lachnocaulon anceps), 1557 (Eriocaulon compressum), 1558 (Eriocaulon compressum var. Harperi), s.n. [Mobile, 7/20/1897] (Eriocaulon decangulare), s.n. [Biloxi, 7-25-1897] (Eriocaulon decangulare); Barnes & Land 159 (Eriocaulon Schiedeanum); Bartlett, H. H., 313 (Eriocaulon septangulare), 11,263 (Paepalanthus Lamarckii), 11,263a (Syngonanthus Bartlettii), 11,670 (Syngonanthus Bartlettii, type coll.), 11,874 (Paepalanthus Gentlei); Bartley & Pontius 503 (Eriocaulon decangulare); Bartram 2277 (Lachnocaulon anceps); Bassett s.n. [Hammonston] (Eriocaulon compressum), s.n. [Atco] (Eriocaulon

decangulare), s.n. [Atco, July 19, 1923] (Eriocaulon decangulare); Batchelder s.n. [Merrimack, Aug. 4, 1917] (Eriocaulon septangulare); Beals s.n. [Hammonton Lake, July 1, 1922] (Eriocaulon compressum), s.n. [Hammonton Lake] (Eriocaulon septangulare); Beechey s.n. [Jalisco] (Eriocaulon Ehrenbergianum); Berg s.n. [Near Tallahassee] (Eriocaulon decangulare), s.n. [Near Tallahassee] (Lachnocaulon minus), s.n. [Near Tallahassee] (Syngonanthus flavidulus); Beringer s.n. [Atco, June, 1895] (Eriocaulon compressum), s.n. [Atco, Aug. 1890] (Eriocaulon decangulare); Berlandier 760 (Eriocaulon Ehrenbergianum, cotype coll.); Beyrich s.n. [Amer. bor.] (Lachnocaulon anceps); Bicknell 230 (Eriocaulon septangulare), 231 (Eriocaulon septangulare), s.n. [Rockville Center, July 25, '03] (Eriocaulon septangulare); Biltmore Herb. 2296a (Eriocaulon compressum var. Harperi), 2755 (Lachnocaulon anceps), 2755a (Lachnocaulon anceps), 3162a (Syngonanthus flavidulus), 3865a (Eriocaulon lineare), 3867a (Eriocaulon decangulare), 3867b (Eriocaulon decangulare), 3867c (Eriocaulon decangulare), 3867d (Eriocaulon decangulare), 3867f (Eriocaulon decangulare), 15,001d (Lachnocaulon eciliatum); Bisky s.n. [Lakeville] (Eriocaulon septangulare); Blake, S. F., 4366 (Eriocaulon septangulare), 10,665 (Eriocaulon decangulare); Blanton, F. S., 6491 (Syngonanthus flavidulus); Blanton, O., 86 (Eriocaulon decangulare); Blodgett s.n. [Martha's Vineyard, Aug. 19, '93] (Eriocaulon septangulare), s.n. [Key West] (Lachnocaulon anceps); Boykin 12 (Lachnocaulon anceps), s.n. (Eriocaulon decangulare); Brainerd s.n. [Lake Dunmore, Aug. 16, 1878] (Eriocaulon septangulare); Briggs s.n. [Chemo Stream, Aug. 1891] (Eriocaulon septangulare); Brinton s.n. [Pine barrens, Sept. 1892] (Eriocaulon septangulare); Britton, N. L., 24 (Eriocaulon Parkeri), 56 (Eriocaulon decangulare), s.n. [Forked River, Aug. 17, 1889] (Eriocaulon decangulare), s.n. [Morris Pond, Sept. 13, 1887] (Eriocaulon septangulare); Britton, Britton, Earle, & Gager 6488 (Syngonanthus lagopodioides); Britton, Britton, & Gager 6960 (Eriocaulon insulare), 6980 (Paepalanthus seslerioides), 7058 (Syngonanthus lagopodioides), 7060 (Eriocaulon fuliginosum), 7090 (Paepalanthus alsinoides), 7130 (Paepalanthus alsinoides), 7131 (Paepalanthus seslerioides), 7251 (Paepalanthus seslerioides), 7254 (Syngonanthus lagopodioides), 7257 (Eriocaulon echinospermum); Britton, Britton, & Timmerman s.n. [Port Sandfield, Sept. 1, 1887] (Eriocaulon septangulare); Britton, Britton, & Wilson 14,144 (Paepalanthus alsinoides var. minus), 14,162 (Syngonanthus insularis, type coll.), 14,179 (Eriocaulon arenicola, type coll.), 14,217 (Syngonanthus lagopodioides), 14,220 (Eriocaulon ovoideum, type coll.), 14,223 (Syngonanthus lagopodioides), 14,225 (Paepalanthus seslerioides), 14,948 (Eriocaulon sclerocephalum), 14,951 (Eriocaulon fusiforme, type

coll.), 15,008 (Eriocaulon pinarense), 15,787 (Syngonanthus lagopodioides), 15,789 (Syngonanthus lagopodioides), 15,789a (Syngonanthus Wilsonii, type coll.); Britton & Wilson 19 (Lachnocaulon anceps), 14,319 (Paepalanthus seslerioides), 15,689 (Paepalanthus seslerioides); Broadway, W. E., 9310 (Paepalanthus Lamarckii); Brown, C. A., 3462 (Eriocaulon septangulare), 3626 (Eriocaulon septangulare); Buckley s.n. [June] (Lachnocaulon anceps); Bush 71 (Eriocaulon decangulare), 107 (Lachnocaulon anceps); Butters s.n. [Clear Lake, Aug. 24, 1919] (Eriocaulon septangulare); Butters & Buell 474 (Eriocaulon septangulare).

Camp 2265 (Eriocaulon Ehrenbergianum); Canby s.n. [Hibernia, March, 1869] (Eriocaulon compressum), s.n. [Ellendale, July 24, 1893] (Eriocaulon decangulare), s.n. [Salisbury, Sept. 1887] (Eriocaulon septangulare), s.n. [Hibernia, 1869] (Lachnocaulon anceps), s.n. [Prope Wilmington, Oct. 1867] (Lachnocaulon minus), s.n. [Hibernia, March, 1869] (Lachnocaulon minus), s.n. [Hibernia, March, 1869] (Syngonanthus flavidulus); Carter s.n. [Gunpowder Sta., Aug. 27, 1903] (Eriocaulon Parkeri), s.n. [Salisbury, July 15, 1904] (Eriocaulon Parkeri), s.n. [Belmar, July 12, 1910] (Eriocaulon Parkeri); Chamberlain s.n. [Wenham Pond, Aug. 1899] (Eriocaulon septangulare); Chaney 67 (Eriocaulon septangulare); Chapman 182 (Syngonanthus flavidulus), s.n. [Florida] (Eriocaulon compressum), s.n. [Florida] (Lachnocaulon Engleri), s.n. [St. Andrew's Bay, 1838] (Lachnocaulon Engleri), s.n. (Syngonanthus flavidulus); Chardon 28 (Paepalanthus Tuerckheimii); Chrysler s.n. [13 July, 1930] (Eriocaulon compressum), s.n. [Chatsworth, 3 June, 1931] (Eriocaulon compressum), s.n. [W. of Speedwell, 13 July, 1930] (Eriocaulon decangulare); Clinton s.n. [Warner, August, 1935] (Eriocaulon septangulare); Clute 116 (Eriocaulon septangulare), 214 (Eriocaulon decangulare); Clute & Wilson s.n. [Hempstead, July 20--21, 1899] (Eriocaulon septangulare); Collector undesignated 272 (Eriocaulon compressum), s.n. [1832] (Eriocaulon decangulare), s.n. [Pine barrens] (Eriocaulon decangulare), s.n. [Sept. 6, '92] (Eriocaulon Ehrenbergianum), s.n. [Schooley's Mtn., August, 1820] (Eriocaulon septangulare), s.n. [Southampton Pond, 1829] (Eriocaulon septangulare), s.n. [Florida] (Lachnocaulon Engleri), s.n. (Eriocaulon septangulare); Columbia University s.n. [Pine barrens] (Eriocaulon compressum); Combs 588 (Eriocaulon fuliginosum); Commons s.n. [Atsion, June 22, 1882] (Eriocaulon compressum), s.n. [Pine barrens, Oct. 1, 1872] (Eriocaulon decangulare), s.n. [June 18, 1875] (Eriocaulon decangulare); Conrad s.n. [Near Philadelphia] (Eriocaulon Parkeri); Cooper, W., s.n. [Lake George, Aug. 1817] (Eriocaulon septangulare), s.n. [Near Tarrytown, August, 1819] (Eriocaulon septangulare); Coville 202 (Eriocaulon decangulare); Crawford &

Bliss s.n. [Atco, July 10, 1927] (Eriocaulon septangulare); Cuesta 371 (Eriocaulon pseudocompressum), 374 (Eriocaulon Emannii); Curtis, M. A., s.n. (Eriocaulon decangulare); Curtiss 3016 [June] (Eriocaulon decangulare), 3016 [July] (Eriocaulon decangulare), 3017 (Eriocaulon compressum), 3021 (Lachnocaulon anceps), 3022 (Lachnocaulon eciliatum, type coll.), 4140 (Syngonanthus flavidulus), 5690 (Eriocaulon decangulare), 5911 (Lachnocaulon minus), 6894 (Lachnocaulon minus), s.n. [Summer, 1885] (Eriocaulon lineare); Cushman & Word s.n. [Shore of South Pond, Aug. 1910] (Eriocaulon septangulare); Cuthbert 141 (Lachnocaulon anceps), s.n. [August, May, 1881] (Lachnocaulon anceps).

Deam, C. C., 1290 (Eriocaulon septangulare), 20,896 (Eriocaulon septangulare), 20,952 (Eriocaulon septangulare), s.n. [Round Lake, 9-1-97] (Eriocaulon septangulare); Davis, C. A., s.n. [Alma, Aug. 13, '95] (Eriocaulon septangulare), s.n. [Alma, Aug. '95] (Eriocaulon septangulare), s.n. [Crystal Falls, Aug. 1905] (Eriocaulon septangulare), s.n. [Sept. 1905] (Eriocaulon septangulare), s.n. [Nantucket, 14 Aug. 1911] (Eriocaulon septangulare); Davis, E., s.n. [Pittsfield] (Eriocaulon septangulare); Denslow s.n. [Killingworth, Sept. 5, 1902] (Eriocaulon septangulare), s.n. [Newbury, July 31, 1923] (Eriocaulon septangulare); Dodge 468 (Eriocaulon septangulare), s.n. [Aug. 30, 1914] (Eriocaulon septangulare), s.n. [Aug. 30, 1916] (Eriocaulon septangulare); Dowell s.n. [Aug. 13, 1910] (Eriocaulon Parkeri); Dreisbach 3593 (Eriocaulon decangulare); Drummond, T., 356 (Eriocaulon decangulare), II.409 (Eriocaulon texense, type coll.); Drushel 10,075 (Eriocaulon decangulare), 10,095 (Eriocaulon decangulare), 10,135 (Lachnocaulon anceps); Duckworth s.n. [Little Lake, Aug. 4, 1906] (Eriocaulon septangulare); Dukes 9 (Lachnocaulon anceps).

Eames 8976 (Eriocaulon Parkeri), s.n. [Chatsworth, VI.12. 1894] (Eriocaulon compressum); Earle 3123 (Eriocaulon decangulare), s.n. [Leesburg, 6/20/1895] (Eriocaulon decangulare); Eaton, A. A., s.n. [Miami, Nov. & Dec. 1903] (Eriocaulon Ravenelii); Eaton, D. C., s.n. [1860] (Eriocaulon decangulare), s.n. (Eriocaulon septangulare); Eaton, H. H., s.n. [Sand Lake, 1829] (Eriocaulon septangulare); Eggers 2216 (Paepalanthus domingensis, cotype coll.), 2216b (Paepalanthus domingensis, cotype coll.); Eggleston 5027 (Eriocaulon decangulare); Ehlers 112 (Eriocaulon septangulare), 1109 (Eriocaulon septangulare), 1686 (Eriocaulon septangulare), 5153 (Eriocaulon septangulare), 5440 (Eriocaulon septangulare), 6150 (Eriocaulon septangulare); Ehrenberg & Aschenborn 531 (Eriocaulon Ehrenbergianum, cotype coll.); Ekman 2341 (Paepalanthus pungens), 3522 (Paepalanthus montanus), 5709 (Paepalanthus pungens), 10,792 (Syngonanthus androsaceus), 10,822 (Eriocaulon sclerocephalum, cotype coll.), 10,823

(Syngonanthus lagopodioides), 11,033 (Paepalanthus seslerioides), 11,034 (Paepalanthus alsinoides var. minimus), 11,061 (Syngonanthus lagopodioides), 11,120 (Tonina fluviatilis), 11,145 (Syngonanthus lagopodioides), 11,221 (Eriocaulon pseudocompressum), 11,956 (Eriocaulon miserrimum, type coll.), 11,965 (Paepalanthus alsinoides var. minimus), 11,973 (Syngonanthus lagopodioides), 11,975 (Eriocaulon sclerocephalum, cotype coll.), 11,990 (Eriocaulon sclerocephalum, cotype coll.), 12,015 (Paepalanthus Lamarckii), 12,029 (Eriocaulon olivaceum, type coll.), 12,029a (Eriocaulon insulare), 12,065 (Eriocaulon cubense, type coll.), 12,071 (Syngonanthus lagopodioides), 12,095 (Syngonanthus insularis), 12,100 (Paepalanthus alsinoides var. minimus), 12,106 (Eriocaulon sclerocephalum), 12,106a (Eriocaulon fuliginosum), 12,191 (Eriocaulon sclerocephalum, cotype coll.), 12,410 (Lachnocaulon anceps), 12,806 (Paepalanthus retusus), 12,807 (Eriocaulon dioecum, type coll.), 17,118 (Lachnocaulon cubense, type coll.), 17,253 (Eriocaulon heteropetalum, type coll.), 17,808 (Eriocaulon insulare, type coll.), 17,810 (Paepalanthus seslerioides), 17,864 (Eriocaulon fuliginosum), 17,877 (Eriocaulon lacustre, type coll.), 17,888 (Eriocaulon Ekmanii, type coll.), 17,913 (Paepalanthus alsinoides), 17,948 (Eriocaulon minutissimum, type coll.), 18,121 (Paepalanthus Lamarckii), 18,127 (Eriocaulon fuliginosum), 18,128 (Eriocaulon echinospermum), 18,132 (Lachnocaulon Ekmanii), 18,769 (Eriocaulon pinarense, type coll.); Erlanson, C. O., 395 (Eriocaulon septangulare).

Fassett 157 (Eriocaulon Parkeri), 7711 (Eriocaulon septangulare); Ferguson 302b (Eriocaulon septangulare), 1869 (Eriocaulon septangulare), 2296 1/2 (Eriocaulon septangulare), 2483 (Eriocaulon septangulare), 7755 (Eriocaulon septangulare), s.n. [Hempstead, 7-25-19] (Eriocaulon septangulare), s.n. [Meadow Brook, 8-26-20] (Eriocaulon septangulare); Fernald 369 (Eriocaulon septangulare); Fernald, Bissell, Graves, Long, & Linder 20,597 (Eriocaulon septangulare); Fernald & Long 6121 (Lachnocaulon anceps), 13,162 (Eriocaulon septangulare), 13,165 (Eriocaulon Parkeri), 13,166 (Eriocaulon Parkeri), 15,167 (Eriocaulon Parkeri), 20,594 (Eriocaulon septangulare), Plant. Exsicc. Gray. 174 (Eriocaulon Parkeri); Fernald, Long, & Dunbar 26,459 (Eriocaulon septangulare); Fernald, Long, & Smart 5698 (Lachnocaulon anceps), 6790 (Eriocaulon decangulare); Fernald & Pease 3220 (Eriocaulon septangulare); Fernald & Wiegand 5068 (Eriocaulon septangulare); Fitch, A., s.n. [East Greenwich, 19.4.13] (Eriocaulon septangulare); Fogg 2508 (Eriocaulon septangulare), 4602 (Eriocaulon decangulare), 4655 (Eriocaulon decangulare); Foote s.n. [July 19, 1868] (Eriocaulon septangulare); Fowler s.n. [St. John, Sept. 1873] (Eriocaulon septangulare); Friesner 10,224 (Eriocaulon septangu-

lare); Fuertes 1748 (Paepalanthus domingensis).

Garber s.n. [Manatee, Apr. 1876] (Syngonanthus flavidulus); Gates 858 (Eriocaulon septangulare); Gates, Fletcher, & Jewett 188 (Lachnocaulon anceps), 189 (Eriocaulon compressum var. Harperi), 190 (Eriocaulon compressum var. Harperi), 191 (Eriocaulon compressum), 192 (Eriocaulon compressum var. Harperi), s.n. [Mobile, May 15, 1839] (Eriocaulon compressum var. Harperi); Gentle 992 (Paepalanthus Gentlei, type coll.), 992a (Paepalanthus Lamarckii), 993 (Eriocaulon fuliginosum); Gibbs s.n. [1st March, 1839] (Eriocaulon compressum), s.n. [Summerville, May 25, 1855] (Lachnocaulon anceps), s.n. [Sept. 1833] (Syngonanthus flavidulus); Gilbert, E. J. C., s.n. [Keene, Sept. 1875] (Eriocaulon septangulare); Gleason & Gleason 202 (Eriocaulon septangulare); Gleason, Smith, & Alexander 173 (Eriocaulon septangulare); Gray, A., s.n. [1840] (Eriocaulon compressum); Greville s.n. (Eriocaulon septangulare); Grimes 3761 (Lachnocaulon anceps), 4135 (Eriocaulon Parkeri); Gross 3016 (Eriocaulon decangulare), 3017 (Eriocaulon septangulare), 3118 (Eriocaulon compressum), s.n. (Eriocaulon compressum); Groves & Groves s.n. [8. VIII. 1892] (Eriocaulon septangulare).

Hale 160 (Lachnocaulon anceps), 456 (Eriocaulon decangulare), s.n. (Eriocaulon decangulare); Hall, E., 635 (Eriocaulon decangulare); Hamilton, C. A., 25,149 (Eriocaulon septangulare); Harper, F., 383 (Eriocaulon compressum var. Harperi), s.n. [Floyd's Island] (Syngonanthus flavidulus); Harper, J. S., 161 (Syngonanthus flavidulus), 394 (Eriocaulon compressum); Harper, R. M., 7 (Lachnocaulon sciliatum), 8 (Lachnocaulon Engleri), 22 (Eriocaulon lineare), 42 (Lachnocaulon minus), 47 (Eriocaulon lineare), 79 (Eriocaulon compressum var. Harperi, type coll.), 85 (Eriocaulon lineare), 223 (Eriocaulon lineare), 443 (Lachnocaulon anceps), 444 (Eriocaulon decangulare), 803 (Syngonanthus flavidulus), 804 (Lachnocaulon anceps), 830 (Eriocaulon lineare, type coll.), 1395 (Eriocaulon compressum var. Harperi), 1491 (Lachnocaulon Beyrichianum), 1607 (Lachnocaulon minus), 1608 (Eriocaulon lineare), 2146 (Eriocaulon lineare), 2170 (Eriocaulon compressum), 2219 (Eriocaulon compressum); Harper & Harper s.n. [Aug. 3, '97] (Eriocaulon septangulare); Hartweg 258 (Eriocaulon Benthani, type coll.); Harvey, F. L., s.n. [Sil-oam Spring, June, 1885] (Eriocaulon Körnickianum), s.n. [Orono, 1884] (Eriocaulon septangulare); Hasse s.n. [Northern Wisconsin, July, 1882] (Eriocaulon septangulare), s.n. [Lake Hilbert, Aug. '84] (Eriocaulon septangulare); Heller, A. A., 180 (Eriocaulon decangulare), 181 (Eriocaulon decangulare), s.n. (Eriocaulon decangulare); Herb. Chapman s.n. [Florida] (Eriocaulon compressum), s.n. [Florida] (Eriocaulon decangulare), s.n. [Florida] (Eriocaulon decangulare var. latifolium, type coll.), s.n. [Lake Mahopac, Aug. 1848] (Eriocaulon

septangulare), s.n. [Lake Dunmore, 1859] (Eriocaulon septangulare), s.n. [Florida] (Lachnocaulon anceps), s.n. [Bristol] (Lachnocaulon minus); Herb. Columbia Univ. s.n. [Fla.] (Lachnocaulon anceps); Herb. Le Roy s.n. [Fla.] (Lachnocaulon anceps), s.n. [St. Andrew's Bay] (Lachnocaulon Engleri); Herb. Torrey s.n. [Pine barrens] (Eriocaulon compressum), s.n. [Pine barrens, June, 1818] (Eriocaulon decangulare); Herb. Torrey Botanical Club s.n. [Hanover] (Eriocaulon septangulare); Herb. Univ. Michigan s.n. [Mobile, May 7, 1839] (Eriocaulon compressum), s.n. [Aug. 25, 1838] (Eriocaulon septangulare); Hermann, F. J., 7012 (Eriocaulon septangulare), 7146 (Eriocaulon septangulare); Hexamer & Meier s.n. [Manchester pond, Aug. 25] (Eriocaulon septangulare); Hinton 627 (Eriocaulon Benthami), 3488 (Eriocaulon Benthami), 3638 (Eriocaulon Benthami), 4549 (Eriocaulon Benthami); Hitchcock, A. S., 374 (Lachnocaulon glabrum), 375 (Eriocaulon decangulare), s.n. [Eustis, June--July, 1894] (Lachnocaulon anceps), s.n. [Eustis, June--July, 1894] (Lachnocaulon minus), s.n. [Eustis, June--July, 1894] (Syngonanthus flavidulus); Hogg 8, in part (Eriocaulon compressum), 8, in part (Syngonanthus flavidulus); Hollick s.n. [Provincetown] (Eriocaulon septangulare); Holm s.n. [Holmead, July 22, 1888] (Eriocaulon decangulare), s.n. [Surattsville, Aug. 6, 1900] (Eriocaulon decangulare); Houghton s.n. [Lac des Isles, Aug. 5, 1831] (Eriocaulon septangulare); House 2685 (Lachnocaulon anceps), 5108 (Eriocaulon compressum), 5822 (Eriocaulon septangulare), 21,951 (Eriocaulon septangulare), 25,128 (Eriocaulon Parkeri), s.n. [North Bay of Oneida Lake, July, 1901] (Eriocaulon septangulare), s.n. [North shore, Oneida Lake, Aug. 1903] (Eriocaulon septangulare); Howe & Lang 686 (Eriocaulon septangulare), 765 (Eriocaulon septangulare), 856 (Eriocaulon septangulare), 1421 (Eriocaulon septangulare), 1583 (Eriocaulon septangulare), 1603 (Eriocaulon septangulare); Huger, A. M., s.n. ["X.Q."] (Eriocaulon compressum), s.n. ["X.C.I."] (Lachnocaulon anceps), s.n. [Winter Park, April, 1900] (Syngonanthus flavidulus); Hyams, M. E., s.n. [Wilmington, July, 1879] (Lachnocaulon anceps).

Ingalls s.n. (Lachnocaulon anceps).

James s.n. [Delaware River near Cooper's Creek] (Eriocaulon Parkeri, cotype coll.); Jameson 206 (Eriocaulon microcephalum); Jennings 338 (Paepalanthus sealerioides), 387 (Paepalanthus alsinoides var. minus, type coll.); Jewett s.n. [Mobile, May 9, 1839] (Lachnocaulon anceps).

Keeler s.n. [Vicinity of Mayport & Jacksonville] (Lachnocaulon anceps); Killip 3614 (Eriocaulon panamense, type coll.), 32,380 (Eriocaulon melanocephalum); Kinloch 213 (Eriocaulon Kinlochii, type coll.); Knight 2 (Syngonanthus flavidulus), s.n. [Echo Lake, 12.7.79] (Eriocaulon septangulare); Kraemer s.n. [Tom's River, June 30, 1891] (Eriocaulon

compressum); Kurz s.n. [May 16, 1926] (Eriocaulon compressum var. Harperi).

Lambert, B. B., 8 (Eriocaulon septangulare); Langdon s.n. [Little Squaw Lake, July 27, 1894] (Eriocaulon septangulare); Langlois s.n. [Pass Christian, March, 1880] (Eriocaulon compressum var. Harperi), s.n. [Near Mandeville, i.V.1893] (Eriocaulon compressum var. Harperi), s.n. [Mandeville, 15. VIII.1892] (Eriocaulon decangulare), s.n. [9.IX.1892] (Eriocaulon decangulare), s.n. [Mandeville to Covington, April, 1879] (Lachnocaulon anceps); Leavenworth s.n. [Tampa Bay] (Eriocaulon compressum), s.n. [Tampa Bay] (Eriocaulon decangulare), s.n. [Tampa Bay] (Syngonanthus flavidulus); Le Conte s.n. (Lachnocaulon anceps); Leggett s.n. [Quaker Bridge, July 8, 1864] (Eriocaulon decangulare), s.n. [Fine barrens, Sept. 16--18, 1873] (Eriocaulon decangulare), s.n. [Canaan Pond] (Eriocaulon septangulare), s.n. [Lake Mohegan, Sept. 6, 1868] (Eriocaulon septangulare); Lehmann 567 (Eriocaulon microcephalum); León 15,946 (Syngonanthus androsaceus); León & Cazanias 5910 (Eriocaulon fuliginosum); León & Roca 6930 (Syngonanthus lagopodioides), 6970 (Paepalanthus seslerioides); Liebmann s.n. [Chinantla] (Eriocaulon microcephalum); Lighthipe 172 (Eriocaulon compressum), 173 (Syngonanthus flavidulus), 452 (Lachnocaulon anceps), s.n. [Monticello, March, 1891] (Syngonanthus flavidulus); Lloyd & Tracy 318 (Lachnocaulon digynum), 319 (Eriocaulon decangulare), 320 (Lachnocaulon anceps); Long, B., 4721 (Eriocaulon Parkeri), 4767 (Eriocaulon Parkeri), s.n. [Millville, Oct. 7, 1909] (Eriocaulon Parkeri); Lucy 2237 (Eriocaulon septangulare); Lugren s.n. [Volusia] (Syngonanthus flavidulus).

MacElwee 658 (Eriocaulon compressum); Mackenzie 796 (Eriocaulon septangulare), 1021 (Eriocaulon septangulare), 1050 (Eriocaulon decangulare), 1638 (Eriocaulon decangulare), 2361 (Eriocaulon decangulare), 3694 (Eriocaulon decangulare), 3846 (Eriocaulon septangulare), 4051 (Eriocaulon decangulare), 4059 (Lachnocaulon anceps), 4257 (Eriocaulon decangulare), 4417 (Eriocaulon septangulare), 4741 (Eriocaulon decangulare), 4850 (Eriocaulon septangulare), 5277 (Eriocaulon septangulare), 5482 (Eriocaulon decangulare), 5671 (Eriocaulon Parkeri), 5684 (Eriocaulon Parkeri), 7236 (Eriocaulon Parkeri), 7277 (Eriocaulon septangulare), 7344 (Eriocaulon Parkeri), s.n. [West of Mantoloking, Sept. 21, 1912] (Eriocaulon Parkeri), s.n. [Waretown, Sept. 1922] (Eriocaulon septangulare); Macoun 22,639 (Eriocaulon septangulare), s.n. [North Sydney, July 14, 1883] (Eriocaulon septangulare); Marie-Victorin 15,737 (Eriocaulon septangulare), s.n. [Lacs du Laurentides, Août, 1912] (Eriocaulon septangulare); McFarlin 2381 (Eriocaulon septangulare), 3418 (Eriocaulon decangulare), 4491 (Eriocaulon compressum), 6381 (Lachnocaulon anceps), 7545 (Eriocaulon decangulare); Mell, C. D., s.n.

[Minatitlan, Nov. 28, 1928] (Paepalanthus Mellii, type coll.); Mellichamp s.n. [Bluffton] (Syngonanthus flavidulus); Metcalf 2172 (Eriocaulon septangulare); Meyer, W. C., 134 (Eriocaulon Williamsii); Michaux s.n. (Syngonanthus flavidulus, type coll.); Miller, W. de W., 1334 (Eriocaulon septangulare); Miner s.n. [Aug. 11, 1931] (Eriocaulon septangulare); Minns s.n. [Crawford's, Aug. 1887] (Eriocaulon septangulare); Mohr s.n. [Oct. 4, 1894] (Eriocaulon decangulare), s.n. [De Funiac Springs, May 12, 1892] (Syngonanthus flavidulus); Moldenke, H. N., 233 (Eriocaulon decangulare), 688 (Syngonanthus flavidulus), 689 (Eriocaulon compressum var. Harperi), 689a (Eriocaulon compressum), 940 (Syngonanthus flavidulus), 1123 (Eriocaulon compressum var. Harperi), 5591 (Eriocaulon decangulare), 10,577 (Eriocaulon compressum); Morong s.n. [Cantonville, Aug. 11, 1873] (Eriocaulon compressum), s.n. [Atco, Sept. 3, 1873] (Eriocaulon decangulare), s.n. [Hamilton, July 27, 1875] (Eriocaulon septangulare), s.n. [South Natick, Sept. 15, 1881] (Eriocaulon septangulare); Muenscher & Curtis 5598 (Eriocaulon Parkeri), 5600 (Eriocaulon Parkeri), 5611 (Eriocaulon septangulare).

Nash 92 (Eriocaulon compressum), 143 (Syngonanthus flavidulus), 148 (Lachnocaulon minus), 847 (Eriocaulon decangulare), 1184 (Lachnocaulon Engleri, type coll.), 1295 (Lachnocaulon minus), 1722 (Eriocaulon decangulare), 1855 (Lachnocaulon minus), 1942 (Lachnocaulon anceps), 1944 (Syngonanthus flavidulus), 1981 (Lachnocaulon floridanum, type coll.), s.n. [July 26, 1909] (Eriocaulon septangulare), s.n. [Twin Lakes, July 30, 1909] (Eriocaulon septangulare); Nat. Herb. Canada 130,088 (Eriocaulon septangulare); Nelson, E. W., 6028 (Eriocaulon Benthami); Nichols 1623 (Eriocaulon septangulare); Northrop, A. B., s.n. [Nashawena, July--Aug. 1901] (Eriocaulon septangulare), s.n. [Nashawena, Aug. 1901] (Eriocaulon septangulare); Northrop, J. I., 184 (Eriocaulon septangulare).

O'Neill 81 (Eriocaulon decangulare), 611 (Syngonanthus flavidulus), 633 (Lachnocaulon anceps), 652 (Syngonanthus flavidulus), 732 (Eriocaulon compressum), 786 (Lachnocaulon anceps), 1153 (Eriocaulon decangulare), 1815 (Eriocaulon decangulare), 1947 (Eriocaulon compressum), 6512 (Eriocaulon compressum), 7778 (Eriocaulon compressum), 7779 (Eriocaulon compressum), 7780 (Eriocaulon compressum), 7781 (Eriocaulon decangulare), 7782 (Eriocaulon decangulare), 7783 (Lachnocaulon anceps), 7785 (Lachnocaulon minus), 7785a (Lachnocaulon Engleri), 7787 (Lachnocaulon anceps), 7788 (Syngonanthus flavidulus), 7875 (Syngonanthus flavidulus), 8190 (Eriocaulon septangulare), 8543 (Syngonanthus hondurensis, type coll.), 8543a (Syngonanthus Oneillii), 8546 (Syngonanthus Lundellianus, type coll.), 8547 (Paepalanthus Gentlei), 8548 (Syngonanthus Oneillii, type coll.), 8549 (Syngonanthus

Oneillii), 9096 (Eriocaulon decangulare), "Count 13" (Eriocaulon decangulare), "Count 100" (Lachnocaulon anceps), "Count 181" (Lachnocaulon anceps), s.n. [Fish Lake, Feb. 20, 1927] (Eriocaulon lineare), s.n. [Prairies, Oct. 28, 1929] (Lachnocaulon anceps), s.n. [Lake Ola, July 2, 1929] (Lachnocaulon Engleri), s.n. [Fish Lake, Feb. 20, 1926] (Syngonanthus flavidulus), s.n. [Big Cypress Swamp, April, 1927] (Syngonanthus flavidulus); Oosting 3555 (Lachnocaulon anceps); Orcutt 3285 (Tonina fluviatilis).

Palmer, Edw., 44 (Eriocaulon Ehrenbergianum), 172 (Eriocaulon Palmeri, type coll.), 580 (Syngonanthus flavidulus), 2029 (Eriocaulon tepicanum, type coll.); Palmer, E. J., 7718 (Eriocaulon compressum), 7981 (Eriocaulon decangulare), 8320 (Eriocaulon Körnickianum), 38,324 (Syngonanthus flavidulus), 38,325 (Eriocaulon compressum); Parker, C. F., s.n. [Opp. Sea Isle City, Aug. 18, '82] (Eriocaulon decangulare), s.n. [Camden] (Eriocaulon Parkeri, cotype coll.); Pelly 73 (Eriocaulon fuliginosum); Pennell 1927 (Eriocaulon decangulare), 4144 (Eriocaulon decangulare), 4465 (Eriocaulon decangulare var. latifolium), 4472 (Eriocaulon decangulare), 4474 (Lachnocaulon digynum), 4509 (Syngonanthus flavidulus), 8194 (Eriocaulon septangulare), 8400 (Eriocaulon septangulare), 8431 (Eriocaulon septangulare), 9075 (Eriocaulon decangulare), 9079 (Eriocaulon decangulare), 9898 (Eriocaulon Parkeri), 12,903 (Eriocaulon decangulare), 16,704 (Eriocaulon septangulare); Phelps 296 (Eriocaulon septangulare); Pittier, H., 4932 (Paepalanthus Lamarckii), s.n. [Herb. Institut. Physico-geogr. Nat. Costaric. 11,043] (Syngonanthus caulescens); Poggenburg s.n. [Manchester, Sept. 19, '85] (Eriocaulon decangulare); Pollard & Maxon 562 (Lachnocaulon anceps); Pringle 1734 (Eriocaulon guadalajarensis, type coll.), 2018 (Eriocaulon Pringlei), 2936 (Eriocaulon Schiedeana, type coll. of E. Jaliscanum), 3855 (Eriocaulon bilobatum, type coll.), 6144 (Eriocaulon microcephalum), 6146 (Eriocaulon Schiedeana), 6299 (Eriocaulon bilobatum), 7361 (Eriocaulon microcephalum), 8989 (Eriocaulon Ehrenbergianum), 11,202 (Eriocaulon mexicanum, type coll.), 13,228 (Eriocaulon microcephalum), s.n. [Near Guadalajara, Oct. 7, 1890] (Eriocaulon Schiedeana); Purpus 179 (Paepalanthus chiapensis), 10,565 (Paepalanthus chiapensis, type coll.); Pyle 754 (Eriocaulon Körnickianum).

Raup 7748 (Eriocaulon septangulare); Ravenel s.n. [St. Johns] (Eriocaulon Ravenelii, type coll.), s.n. [Aiken 1870] (Lachnocaulon anceps), s.n. [Florence, 1879] (Lachnocaulon anceps), s.n. [Florence, 1879] (Syngonanthus flavidulus); Reverchon 2766 (Eriocaulon decangulare), 4359 (Eriocaulon texense); Reynolds, M. C., s.n. [St. Augustine, 1877] (Eriocaulon compressum), s.n. [St. Augustine, Mar.--June, 1875] (Lachnocaulon Beyrichianum), s.n. [Mar.--July, 1875] (Syngo-

nanthus flavidulus); Rich, R. H., s.n. [Ton's River, May 30, 1887] (Eriocaulon compressum), s.n. [July 26, 1896] (Eriocaulon septangulare); Robinson, C. B., 396 (Eriocaulon septangulare); Robinson & Schrenk 112 (Eriocaulon septangulare), s.n. [12 Aug. 1894] (Eriocaulon septangulare); Rose, J. N., s.n. [August, 1897] (Eriocaulon Ehrenbergianum); Rose & Painter 7929 (Eriocaulon microcephalum); Rousseau 35,579 (Eriocaulon septangulare); Rugel s.n. [Swanano, Jul. 1841] (Eriocaulon decangulare); Ruger s.n. [Manchester] (Eriocaulon decangulare); Ruggles s.n. [Near Milton] (Eriocaulon septangulare); Rusby, H. H., s.n. [Bass River, Aug. 1875] (Eriocaulon compressum), s.n. [Bass River, Aug. 1875] (Eriocaulon decangulare), s.n. [Stockton, Aug. 1889] (Eriocaulon decangulare), s.n. [Stockton, Aug. 1889] (Eriocaulon septangulare); Ruth 133 (Lachnocaulon anceps).

Salmon s.n. [circa 1843] (Eriocaulon septangulare); Sandberg s.n. [Aug. 1891] (Eriocaulon septangulare); Schaffner, W., 226 (Eriocaulon Ehrenbergianum), 226a (Eriocaulon Ehrenbergianum), 226b (Eriocaulon microcephalum), 426 (Eriocaulon microcephalum); Schiede s.n. [Mineral del Monte] (Eriocaulon Ehrenbergianum, cotype coll.), s.n. [Toluca] (Eriocaulon Ehrenbergianum, cotype coll.); Schipp 647 (Eriocaulon Schippii, type coll.), 693 (Tonina fluviatilis), S.130 (Paepalanthus Lamarckii); Schrenk s.n. [Manchester, July 25, '77] (Eriocaulon decangulare); Schweinitz s.n. (Eriocaulon decangulare); Seemann 295 (Eriocaulon Seemannii, type coll.); Sessé, Mocino, Castillo, & Maldonado 456 (Eriocaulon Ehrenbergianum; cotype coll. of E. anceps Sessé & Moc.), 465 (Eriocaulon Ehrenbergianum; cotype coll. of E. anceps Sessé & Moc.); Seymour 268 (Eriocaulon septangulare); Shafer 4093 (Paepalanthus seslerioides), 4104 (Paepalanthus montanus), 4106 (Paepalanthus riparius, type coll.), 4473 (Paepalanthus montanus, type coll.), 8045 (Paepalanthus montanus), 8251 (Paepalanthus montanus), 10,663 (Eriocaulon fuliginosum), 10,682 (Paepalanthus alainoides var. minus), 10,866 (Syngonanthus lagopodioides), 10,882 (Paepalanthus seslerioides), 10,956 (Paepalanthus seslerioides), 10,995 (Syngonanthus lagopodioides), 11,011 (Lachnocaulon Ekmanii), 11,705 (Eriocaulon echinospermum), 11,782 (Syngonanthus lagopodioides), 11,784 (Syngonanthus androsaceus); Sheehan s.n. [Cat-tail Island, Feb. 26, 1919] (Eriocaulon compressum), s.n. [Goffstown, July 31, 1931] (Eriocaulon septangulare), s.n. [Boakum Place, March 6, 1919] (Syngonanthus flavidulus); Simpson, J. H., 396 (Eriocaulon decangulare); Skottsberg, C., s.n. [Buckingham, 19.5.1935] (Eriocaulon compressum), s.n. [Sanford, 14.5.1935] (Lachnocaulon anceps), s.n. [Below Jacksonville & Atlantic Beach] (Syngonanthus flavidulus); Skutch 617 (Eriocaulon Ehrenbergianum), 2465 (Tonina fluviatilis); Small, J. K., 7386 (Eriocaulon compressum), 8339

(Lachnocaulon glabrum), s.n. [Dunn's Mtn., Aug. 18--27, 1894] (Eriocaulon decangulare), s.n. [Near Valparaiso, June 6--12, 1895] (Eriocaulon decangulare), s.n. [About Darien Jct., June 25--27, 1895] (Eriocaulon decangulare), s.n. [Lily Lake, Aug. 15, 1889] (Eriocaulon septangulare), s.n. [Budd's Lake, August 12--14, 1890] (Eriocaulon septangulare); Small & Carter 654 (Eriocaulon Ravenelii), 690 (Lachnocaulon glabrum), 888 (Eriocaulon Ravenelii), 1024 (Lachnocaulon glabrum), 1029 (Eriocaulon decangulare), 1037 (Lachnocaulon minus), 1148 (Eriocaulon Ravenelii), 2991 (Eriocaulon compressum), 3067 (Eriocaulon Ravenelii), s.n. [Between Cocconut Grove & Cutler] (Eriocaulon Ravenelii); Small & Heller 180 (Eriocaulon decangulare); Small, Carter, & Small 3264 (Eriocaulon compressum), 3361 (Eriocaulon compressum); Small & Dewinkeler 9044 (Eriocaulon compressum var. Harperi), 9044a (Eriocaulon compressum); Small, Mosier, & Small 6892 (Lachnocaulon glabrum), 6912 (Lachnocaulon glabrum); Small & Nash s.n. [West of Miami, Nov. 1 & 9, 1901] (Eriocaulon Ravenelii); Small & Small 4429 (Eriocaulon Ravenelii), 4447 (Eriocaulon Ravenelii); Small & Wherry 11,695 (Eriocaulon compressum var. Harperi); Small & Wilson 1608 (Lachnocaulon glabrum), 1613 (Lachnocaulon glabrum), 1783 (Lachnocaulon glabrum); Smith, A. V., 325 (Eriocaulon compressum), 333 (Eriocaulon compressum), s.n. [May, 1936] (Eriocaulon compressum), s.n. [N. J. pine barrens, July 28, 1935] (Eriocaulon decangulare); Standley, J. F., 10 (Syngonanthus flavidulus), 15 (Eriocaulon compressum), 33 (Lachnocaulon glabrum); Standley, P. C., 42, 326 (Paepalanthus costaricensis, type coll.); Standley & Valerio 43, 637 (Eriocaulon microcephalum), 43, 830 (Eriocaulon microcephalum); St. John 1168 (Eriocaulon septangulare).

Taylor, B. C., s.n. [Center City, Aug. 1892] (Eriocaulon septangulare), s.n. [Linn Lake, Aug. 1892] (Eriocaulon septangulare); Taylor, N., 2558 (Eriocaulon Parkeri), 2853 (Eriocaulon decangulare); Tidestrom 11,236 (Eriocaulon septangulare), s.n. [July 4, 1907] (Eriocaulon decangulare); Topping 2609 (Syngonanthus flavidulus), 2611 (Eriocaulon compressum); Torrey Botanical Club s.n. [Forked River, May 29--June 2, 1896] (Eriocaulon compressum); Torrey & Cooper s.n. [Near Quaker Bridge] (Eriocaulon compressum); Townsend & Barber 117 (Eriocaulon Ehrenbergianum); Tracy 3428 (Eriocaulon decangulare), 5031 (Lachnocaulon anceps), 5032 (Eriocaulon compressum var. Harperi), 6417 [Biloxi] (Eriocaulon decangulare), 6417 [Ocean Springs] (Eriocaulon decangulare), 6642 (Syngonanthus flavidulus), 6643 (Syngonanthus flavidulus), 7586 (Lachnocaulon anceps), 7587 (Eriocaulon decangulare), 7588 (Syngonanthus flavidulus), 8043 (Eriocaulon decangulare); Tuckerman s.n. [Mountain Lakes] (Eriocaulon septangulare); Türckheim 3327 (Paepalanthus Tuerckheimii, type).

coll.), 3422 (Paepalanthus domingensis).

Underwood, L. M., 1928 (Eriocaulon compressum), 3124 (Eriocaulon septangulare), s.n. [West Goshen, Aug. 1890] (Eriocaulon septangulare); Univ. of Michigan party s.n. [July, 1868] (Eriocaulon septangulare), s.n. [1868] (Eriocaulon septangulare),

Van Hermann 570 (Syngonanthus androsaceus); Van Pelt s.n. [Chatsworth, Aug. 20, 1907] (Eriocaulon decangulare).

Walsh s.n. [Southern States] (Eriocaulon compressum); Weatherby, C. A., 6123 (Eriocaulon compressum); Wehmeyer s. n. [Hart Lake, Sept. 8, 1930] (Eriocaulon septangulare); Wherry s.n. [Flat Rock Sta., 5-30-1927] (Eriocaulon lineare); White, T. G., s.n. [Shores of Jordan's Pond] (Eriocaulon septangulare); Whitehouse 581 (Lachnocaulon anceps); Williams, R. S., 299 (Eriocaulon Williamsii, type coll.); Williamson, C. S., 1106 (Eriocaulon septangulare), s.n. [Bennet, June 16, 1907] (Eriocaulon compressum), s.n. [Fish House, Oct. 2, 1905] (Eriocaulon Parkeri), s.n. [Fish House, July 28, 1906] (Eriocaulon Parkeri), s.n. [Havre-de-Grace, Sept. 1, 1906] (Eriocaulon septangulare), s.n. [Weldon] (Lachnocaulon minus), s.n. [Wilmington] (Lachnocaulon minus); Wilson, P., s.n. [Opposite Island Heights, July 26, 1909] (Eriocaulon decangulare), s.n. [Merrick, Sept. 11, 1915] (Eriocaulon septangulare), s.n. [Lake Katrine, Aug. 18, 1916] (Eriocaulon septangulare), s.n. [Lake Shandee, Aug. 7, 1918] (Eriocaulon septangulare), s.n. [Sand Pond, Aug. 13, 1918] (Eriocaulon septangulare); Wood, N. A., s.n. [Whitefish Point, 1912] (Eriocaulon septangulare); Woodson, Allen, & Seibert 1130 (Eriocaulon panamense), 1650 (Eriocaulon Seemannii); Woodward s.n. [Old Lyme, Aug. 1, 1918] (Eriocaulon Parkeri); Wright, C., 748 (Paepalanthus seslerioides), 749 (Syngonanthus androsaceus), 753 (Eriocaulon fuliginosum), 756 (Eriocaulon melanocephalum), 3229 (Eriocaulon fuliginosum, type coll.), 3234 (Paepalanthus seslerioides, type coll.), 3235 (Syngonanthus androsaceus, type coll.), 3236 (Syngonanthus androsaceus), 3237 (Syngonanthus lagopodioides, type coll.), 3238, in part (Eriocaulon fuliginosum; cotype coll. of E. scirpoides), 3238, in part (Syngonanthus lagopodioides), 3240 (Eriocaulon melanocephalum), 3241 (Eriocaulon melanocephalum var. longipes, type coll.), 3242 (Tonina fluviatilis), 3737 (Eriocaulon sigmoideum, type coll.), 3738 (Eriocaulon echinospermum, type coll.), 3738 (Eriocaulon fuliginosum; type coll. of E. sphaerospermum), 3740 (Eriocaulon fuliginosum; type coll. of E. trichosepalum), 3741 (Eriocaulon pseudocompressum, type coll.), 3742 (Paepalanthus Lamarckii), 3743 (Paepalanthus alsinoides, type coll.), 3743a (Paepalanthus alsinoides var. minus), 3744 (Paepalanthus retusus, type coll.), s.n. (Eriocaulon echinospermum), s.n. (Paepalanthus alsinoides); Wright, G.

W., s.n. [1876] (Eriocaulon septangulare).

Xantus de Vesey s.n. [Fort Tíjon] (Eriocaulon microcephalum).

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- V

Harold N. Moldenke

The following notes constitute a continuation of those published in Phytologia 1: 182--208, 222--240, and 248--272 (1937) and 289--304 (1938).

An alphabetized list of citations [additional to those published in Brittonia 1: 472--477 (1934) and Phytologia 1: 301--304 (1938)]:

Gaudichaud 630 (Luschnathi), 1801 (brachiata), s.n. [1830] (Sellowiana); Geay s.n. [Guaritico] (mollis); Gehrt s.n. [Herb. Instit. Biol. S. Paulo 30,081] (graveolens); Gentle 263 (monstrosa), 404 (monstrosa), 948 (monstrosa); Glaziou 11,333 (lanceolata; type coll. of A. ferruginea Glaz.), 21,917 (lanata, type coll.), A (integrifolia); Gleason 237 (Gleasonii, type coll.); Glocker 578b (Lhotzkiana), 2166 (Lhotzkiana); Goeldi 6999 (racemosa), 7002 (racemosa), 8166 (Goeldiana, type coll.); Goudot 2 (mollis), s.n. [Bogotá] (bogotensis), s.n. (elata), s.n. [Pandi] (Goudotiana, type coll.), s.n. [Bogotá] (grandis), s.n. [Portachuela, Quindiu] (grandis, type coll.); Gouin s.n. [1867] (Deppeana); Grég s.n. (obovata); Grisebach s.n. (martinicensis); Grosourdy Cat. 13 s.n. (parviflora), s.n. [1864] (Hastingsiana, type coll.); Guilding s.n. (martinicensis); Guillemín 53 (Luschnathi), 630 (Luschnathi), 975 (obducta).

Hahn s.n. [Medelli] (Deppeana), s.n. [Potrero] (elata); Hallier f. C.240 (martinicensis); Handro s.n. [Herb. Instit. Biol. S. Paulo 33,523] (obducta); Harris, W., 5533 (uniflora, type coll.), 8166 (martinicensis var. oligoneura, type coll.), 8996 (obtusa, type coll.), s.n. [7.XI.95] (elata); Hart s.n. (elata); Hassler 1674 (Hassleri, cotype coll.), 1921 (paraguariensis, cotype coll.), 3193 (Hassleri, cotype coll.), 4271 (Hassleri, cotype coll.), 4498 (paraguariensis, cotype coll.), 5056 (paraguariensis, cotype coll.), 6766 (paraguariensis, cotype coll.), 6780 (Hassleri, cotype coll.), 6931 (paraguariensis, cotype coll.), 8056 (platyphylla, type coll.), 8120 (Candelabrum, type coll.), 8632 (Hassleri), 10,852 (paraguariensis); Haught 1629 (glandulifera); Hayes 269 (glandulifera), s.n. [Dec. 7] (glandulifera).

a), s.n. [Panama, Dec. 7, 1862; Natal Herb. 10,208] (panamensis); Heinrichs 499 (pendula); Henschen s.n. [Herb. Regnell. I.184, 1868] (Sellowiana); Herb. Adanson 227 (integrifolia), s.n. (martinicensis); Herb. Baillon s.n. (bogotensis), s.n. (mollis), s.n. (ternifolia); Herb. Bernhardt s.n. (Lhotzkiana); Herb. Boas 1113 (fluminensis); Herb. Caes. Petrop. s.n. [Herb. Martius] (vitelliniflora); Herb. Colmann s.n. (martinicensis); Herb. De Candolle 829 (integrifolia), 869 (Sellowiana), 876 (Sellowiana), 892 (Lhotzkiana, type coll.); Herb. Gen. Mus. Para. 2270 (intermedia, type coll.); Herb. Hooker s.n. (martinicensis); Herb. Hornemann s.n. [Ex Ind. occid.?] (martinicensis); Herb. Imp. Vien. 149 (splendens, type coll.), 152 (vitelliniflora), 155 (Lhotzkiana), 1643 (lanceolata); Herb. Institut. Biol. S. Paulo 748 (paragvariensis), 5489 (verticillata), 8179 (Sellowiana), 15,614 (dentata, type coll.), 20,089 (pernambucensis), 20,099 (lanceolata), 20,562 (lanceolata), 28,666 (Sellowiana), 30,081 (graveolens), 31,636 (Sellowiana), 33,425 (Hoehnei, type coll.), 33,523 (obducta); Herb. Institut. Physico-geogr. Nat. Costaric. 9167 (costaricensis, type coll.), 13,629 (magnifica), 14,484 (glandulifera); Herb. A. L. Jussieu 5034a (martinicensis), 5034b (martinicensis), 5035a (elata), 5035b (elata), 5036 (integrifolia), 5039 (racemosa), 5041 (elata), s.n. (martinicensis); Herb. Lamarck 261 (nervosa), s.n. [Guadeloupe] (martinicensis); Herb. Liebmann s.n. (martinicensis); Herb. Link s.n. (laevis); Herb. Linnaeus G.810, S.8 (elata), G.810, S.9 (Deppeana); Herb. Martius 379 (paragvariensis), 1041 (vitelliniflora; type coll. of A. cuspidata), s.n. [Herb. Monac. 1450] (Sellowiana), s.n. (fluminensis), s.n. (vitelliniflora); Herb. Monac. 1000 (racemosa), 1002 (integrifolia), 1003 (bracteolosa), 1004 (bracteolosa; cotype coll. of A. arborescens var. longiflora), 1005 (bracteolosa; cotype coll. of A. arborescens var. longiflora), 1006 (bracteolosa), 1007 (Deppeana), 1008 (racemosa), 1009 (racemosa), 1011 (racemosa), 1012 (racemosa), 1014 (vitelliniflora; type coll. of A. cuspidata), 1015 (vitelliniflora), 1016 (vitelliniflora), 1017 (elata), 1018 (elata), 1019 (elata), 1020 (filipes, cotype coll.), 1021 (filipes), 1022 (filipes), 1023 (fluminensis), 1024 (fluminensis), 1026 (graveolens), 1028 (Lhotzkiana), 1029 (Lhotzkiana), 1030 (Lhotzkiana), 1031 (paragvariensis), 1032 (Lhotzkiana), 1033 (parviflora), 1034 (Lhotzkiana), 1035 (martinicensis), 1036 (martinicensis), 1037 (martinicensis), 1038 (martinicensis), 1039 (martinicensis), 1040 (mediterranea), 1042 (Sellowiana), 1043 (Sellowiana), 1045 (verticillata), 1046 (verticillata), 1047 (verticillata), 1091 (graveolens), 1188 (membranacea), 1189 (laevis), 1447 (Lhotzkiana), 1448 (martinicensis), 1449 (martinicensis), 1450 (Sellowiana), 1657 (verticillata), 1658 (Sellowiana), 1689 (filipes, cotype coll.), 1692 (grav-

solens), 1723 (laxicipulis), 1724 (falcata), 1725 (Sellowiana), 1726 (integrifolia), 1727 (setiformis; type coll. of A. densiflora), 1843 (perplexa, type coll.), 3706 (glomerata), 3822 (martinicensis), 3831 (integrifolia), 3833 (elata), 4033 (Hassleri), 4094 (costaricensis), 4297 (fasciculata, type coll.), 4298 (fasciculata, type coll.), 4305 (obovata); Herb. Mus. Goeldi 2270 (intermedia, type coll.); Herb. Mus. Paris s.n. (longifolia); Herb. Pavon s.n. [Huayaquil] (Pavoniana), s.n. ["Peruvia"] (Pavoniana, type coll.), s.n. (Deppeana); Herb. Persoon s.n. (martinicensis); Herb. Pierre s.n. (ferruginea); Herb. Fuerar s.n. [1824] (martinicensis); Herb. Regnell 1.184 [1868] (Sellowiana); Herb. Rio de Janeiro 19,949 (macrantha, type coll.), 22,947 (obducta); Herb. Roig 4232 (elata); Herb. Spruner s.n. (Lhotzkiana); Herb. Univ. Christian. s.n. (martinicensis); Herb. Vahl s.n. (martinicensis); Herb. Ventenat s.n. (elata), s.n. (Luschnathi); Herb. Willdenow 2834 (mollis; type coll. of A. salutaris); Herb. Zuccarini s.n. [Herb. Monac. 1034] (Lhotzkiana), s.n. [Herb. Monac. 1016] (vitelliniflora), s.n. [Herb. Monac. 1043] (Sellowiana); Herminier s.n. (martinicensis); Herv. Com. Geogr. e Geol. S. Paulo 4362 (dentata, type coll.); Herzog 1369 (Herzogii, type coll.); Heyde 191 (laxicipulis, type coll.); Hitchcock, A. S., s.n. [1843] (elata), s.n. [Grand Cayman, 1-17-'91] (caymanensis, type coll.), s.n. [Grand Cayman, 1-17-'91] (elata); Hoehne, F. C., pl. viv. 192 (Sellowiana), pl. viv. 442 (obducta), s.n. [Herb. Inst. Biol. S. Paulo 33,523] (obducta), Com. Rondon 1287 (laevis), 1341 (integrifolia), 4301 (Candelabrum), 5122 (integrifolia), 6109 (verticillata); Hooker, W., s.n. [1843] (elata); Hort. Boyton s.n. [A. B. Lambert, 1807; Lord Seaforth, West Indies] (obovata, type coll.), s.n. [A. B. Lambert, 1807; Lord Seaforth, West Indies] (martinicensis; type coll. of A. diffusa), s.n. [A. B. Lambert, 1808; Lord Seaforth, West Indies] (martinicensis); Hort. Kew. s.n. [1785] (martinicensis); Hort. Liverpool s.n. (martinicensis); Hort. Monac. s.n. [Herb. Monac. 1038] (martinicensis); Hort. Thenensis 1.4507 (martinicensis); Hostmann 89 (membranacea, type coll.), 543 (laevis), 721 (laevis), s.n. (laevis); Hostmann & Kappler 89, in part (membranacea); Houlet s.n. (obducta); Huber 809 (intermedia), 4253 (integrifolia); Huggins s.n. [Trin. Bot. Gard. Herb. 2385] (integrifolia); Humboldt & Bonpland s.n. [El Moral, Quindiu] (quinduensis, type coll.), s.n. [Woods of the Orinoco] (mollis, type coll.).

Imray 85 (martinicensis), 420 (martinicensis); Isert 87 (martinicensis).

Jacquin s.n. (martinicensis, type coll.); Jard. Bot. Paris s.n. [de l'isle de Cuba] (martinicensis); Jard. Malmaison s.n. (martinicensis); Jelski s.n. [Cayenne] (membranacea); Jenman 5948 (integrifolia), 6689 (villosa), 6715 (racemosa);

Jobert 630 (bracteolosa); Julio 454 (multiflora).

Kappler 543 (laevis), s.n. (laevis); Karsten s.n. [1847] (verrucosa), s.n. [Colonia Tovar, 1848] (verrucosa; type coll. of Brückea grandifolia), s.n. (floribunda); Kegel 173 (laevis), 687 (laevis); Kenoyer 607 (cephalophora, type coll.); Kerber 305 (Deppeana); Killip & Smith 14,729 (paniculata, type coll.), 14,849 (sylvatica, type coll.), 19,706 (bogotensis), 20,870 (Killipii, type coll.), 25,503 (glabrata, type coll.), 26,520 (ovata, type coll.), 26,882 (filipes), 26,957 (Smithii, type coll.), 27,055 (elegans, type coll.), 27,439 (sufflava, type coll.), 27,793 (sordida), 28,386 (cuneata, type coll.), 28,858 (triflora, type coll.), 30,661 (glandulifera var. paraënsis, type coll.); Klug 2511 (sufflava var. Klugii, type coll.), 2574 (sufflava), 3016 (glandulifera), 3468 (integrifolia), 3511 (peruviana), 3894 (Smithii); Kohaut s.n. (martinicensis); Koscinsky 225 (Sellowiana); Kraus 273 (martinicensis); Krebs s.n. (martinicensis); Krukoff 1400 (villosissima, type coll.), 5060 (bracteolosa), 5125 (filipes), 5923 (glandulifera var. paraënsis), 8041 (filipes), 8042 (filipes), 8290 (glandulifera), 8701 (elegans); Kuhlmann, Com. Rondon 2277 (Hoehnei, type coll.); Kuntze s.n. (chrysantha).

Labroy 9 (integrifolia); Lambert s.n. (martinicensis); Lang & Persaud 253 (bracteolosa, type coll.); Langsdorff s.n. [Mandioca; Riedel] (Sellowiana); Lawrance 548 (integrifolia); Leblond 269 (villosa), 283 (martinicensis), 362 (laevis); Ledru s.n. (martinicensis); Lee s.n. [Dec. 2, 1887] (martinicensis); Legit Anonymus ante ann. 1840 s.n. (martinicensis); Lehmann 4066 (novogranatensis, type coll.), 6692 (mollis; type coll. of Cornutia velutina), 8524 (aculeifera, type coll.), B.T.1117 (Lehmannii, type coll.); Leprieur s.n. [Guiana française, 1838] (villosa), s.n. [Guiana française, 1840] (villosa), s.n. (laevis); Lhotaky s.n. [Herb. De Candolle 892] (Lhotzkiana, type coll.), s.n. (fluminensis); Liebmann 11,957 (Deppeana); Lillo 10,448 (mediterranea); Lindberg 496 (verticillata); Lindley 222 (paraguariensis), 222b (paraguariensis); Lockhart s.n. [All hills that have been lately cultd.] (laxiflora), s.n. [Bahia] (Lhotzkiana); Löfgren 245 (paraguariensis); Luetzelburg 12,345 (Sellowiana), 22,296 (bracteolosa), 26,190 (Lhotzkiana); Lund 796 (graveolens, type coll.), 820 (verticillata), s.n. [Taubaté, November '33] (verticillata), s.n. (Lhotzkiana); Lundell, C. L., 1492 (monstrosa); Luschnath s.n. [Lagoa Sacaremo] (Luschnathi, cotype coll.), s.n. [Brasilia] (Luschnathi, cotype coll.), s.n. [Herb. Martius 1041; Herb. Monac. 1014] (vitelliniflora; type coll. of A. cuspidata), s.n. [Brasilia] (fluminensis), s.n. [Capocabona] (fluminensis), s.n. (fluminensis); Lyster s.n. [Cult. Hort. Berol., Sept. 1839] (vitelliniflora, type coll.).

Macbride photos 7879 (Luschnathi, photo of cotype), 7880 (graveolens, photo of type), 20,350 (filipes, photo of cotype), 22,775 (odontophylla), 24,614 (Lhotzkiana), 24,619 (peruviana, photo of isotype); Walme 898 (Riedeliana), 951 (Riedeliana), 2473a (paraguariensis); March 902 (trifida), 972 (elata), 1411 (foetida), 1461 (elata); Martin, J., s.n. [Rudge] (laevis), s.n. [Cayenne] (villosa), s.n. (laevis); Martius 0,39 (racemosa), 120 (graveolens), 166 (mediterranea), 448 (Sellowiana), 480 (verticillata), 1040 (Luschnathi, cotype coll.), 1112 (fluminensis), 1934 (graveolens), 2222 (Lhotzkiana), 2724 (racemosa), s.n. [Herb. Monac. 1000 & 1009] (racemosa), s.n. [Forte dos Miranhao, Decbr.; Herb. Monac. 1004] (bracteolosa; cotype coll. of A. arborescens var. longiflora), s.n. [Barra de Rio Negro, Octbr.; Herb. Monac. 1005] (bracteolosa; cotype coll. of A. arborescens var. longiflora), s.n. [Prov. Rio Negro; Herb. Monac. 1006] (bracteolosa), s.n. [Sylvia secus Amazon, Pará; Herb. Monac. 1020 & 1689; Macbride photos 20,350] (filipes, cotype coll.), s.n. [Prov. Paraënsis; Herb. Monac. 1021 & 1022] (filipes), s.n. [Herb. Monac. 1026] (graveolens), s.n. [Herb. Monac. 1031] (paraguariensis), s.n. [R. Negro; Herb. Monac. 1011] (racemosa), s.n. [Herb. Monac. 1046 & 1047] (verticillata), s.n. [Herb. Monac. 1030] (Lhotzkiana); Masson s.n. (elata); Mathews, A., s.n. [Chacapoyas] (cordifolia); Matuda 666 (falcata); Mayerhoff s.n. [1859] (integrifolia); McFadyen s.n. (elata), s.n. (trifida); Melin s.n. [Iquitos] (Smithii); Mélinon 83 (membranacea), 111 (membranacea), 330 (macrantha), 436 (membranacea), 439 (villosa), 486 (membranacea), s.n. [in 1864] (membranacea), s.n. [1845] (laevis), s.n. [1877] (macrantha); Mendonça 727 (paraguariensis); Mexia 5922 (salticola, type coll.), 6499 (Smithii), 6656 (alba, type coll.), 7173 (integrifolia), 7187 (integrifolia), 7289 (integrifolia), 7446 (ferruginea); Miers 3096 (mediterranea), 3191 (fluminensis), 3712 (Luschnathi), s.n. [Laranjeira] (fluminensis), s.n. [Tejuco] (fluminensis), s.n. [Barra de Iguaçu] (graveolens), s.n. [Arraras, Jan. 7, 1838] (Riedeliana), s.n. [Organ Mount., 1828] (Sellowiana), s.n. [Imbuby, Organ Mt., Dec. 1837] (Sellowiana), s.n. [Magé to Freichal, 1 May 1838] (vitelliniflora), s.n. [Organ Mount.] (obducta); Mikan s.n. (Luschnathi); Miller, P., 8 (Deppeana); Mocquerys 910 (martinicensis), 1018 (laeta); Moricand s.n. (Lhotzkiana); Moritz 363 (mollia), 364 (glandulifera var. pyramidata), 897 (verrucosa, type coll.), 973 (elata), 1910 (mollis); Mosén 2005 (Riedeliana); Moss s.n. [1919] (glandulifera var. paraënsis); Müller, Fr., s.n. [Schwacke 1465] (brachiata); Mus. Bot. Berol. s.n. ["Bras.?"] (martinicensis; type coll. of A. straminea); Mus. Yale School of Forestry 22,820 (monticola, type coll.), 28,648 (Rimbachii, type coll.), 31,994 (ferruginea).

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PHYTOLOGIA

Designed to expedite botanical publication

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September, 1940

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance

Vol. I, No. 10, was issued November 27, 1939



ADDITIONS TO THE FLORA OF MEXICO AND CENTRAL AMERICA (a)

C. L. Lundell

PRUNUS MATUDAI Lundell, sp. nov.

Arbor glaberrima, 7 m. alta, 17 cm. diam. Petioli 5--7.5 mm. longi. Lamina basi 1--5 glandulosa, integra, chartacea, lanceolata, 5--8.5 cm. longa, 1.7--3.3 cm. lata, acuminata, basi rotundata. Racemi axillares solitarii, usque ad 5 cm. longi; pedicelli usque ad 6 mm. longi. Sepala 5 vel 6, obtuse triangularia, ca. 0.5 mm. longa. Petala 5 vel 6, usque ad 2 mm. longa, 2.2 mm. lata. Stamina 2.5--3 mm. longa, antherae 0.5 mm. Stigma ca. 0.7 mm. diam.

A glabrous tree, 7 m. high, 17 cm. diam.; branchlets slender, striate. Petioles slender, canaliculate, 5 to 7.5 mm. long. Leaf blades entire, chartaceous, entirely glabrous, lanceolate, 5 to 8.5 cm. long, 1.7 to 3.3 cm. wide, acuminate, base rounded, costa and veins slightly impressed above, the veins scarcely discernible, costa elevated beneath, the veins fine and inconspicuous, bearing at or near the base 1 to 5 glands about midway between costa and margin. Racemes axillary, solitary, up to 5 cm. long, entirely glabrous, drying reddish-black, pedunculate, bearing up to 27 flowers, these not crowded; pedicels slender, up to 6 mm. long. Hypanthium turbinate, about 2.3 mm. long, 2.5 mm. in diameter. Sepals 5 or 6, minute, obtusely triangular, about 0.5 mm. long. Petals 5 or 6, suborbicular, up to 2 mm. long, 2.2 mm. wide, subentire or remotely erose. Stamens 2.5 to 3 mm. long, slender; anthers about 0.5 mm. long. Stigma about 0.7 mm. diam.

Type in the University of Michigan Herbarium, Eizi Matuda 2453, collected on Volcan de Tacana, Chiapas, Mexico, Aug. 1938, alt. 1000--2000 m.

P. Matudai is related to P. erythroxylon Koehne, P. axitliana Standl., and P. Lundelliana Standl.

CALLIANDRA CHIAPENSIS (Britt. & Rose) Lundell, comb. nov.

Anneslia chiapensis Britt. & Rose, N. Amer. Fl. 23: 61. 1928.

ZANTHOXYLUM SONORENSE Lundell, sp. nov.

Frutex. Folia hirtella, imparipinnata, 2.5--5 cm. longa; foliola 5--9, oblanceolata, obovata, vel oblanceolato-oblonga, 0.4--1.8 cm. longa, 0.25--0.6 cm. lata, apice obtusa vel rotundata et emarginata, basi cuneata, crenulata. Infructescentia racemosa, usque ad 1.5 cm. longa. Sepala 4. Follicula 1 vel 2, ellipsoidea, 3--3.5 mm. diam., 4--4.5 mm.

longa, stipitata.

A shrub armed with short nearly straight slender prickles; twigs slender, hirtellous. Leaves hirtellous, odd-pinnate, 2.5 to 5 cm. long, with prominently winged petiole and rachis; leaflets 5 to 9, sessile or nearly so, callosed at base, oblanceolate, obovate, or oblanceolate-oblong, 0.4 to 1.8 cm. long, 0.25 to 0.6 cm. wide, apex obtuse or rounded and minutely emarginate, base cuneate, margin crenulate, glandular, the glands chiefly below the crenatures, slightly paler beneath, hirtellous on both surfaces but sparingly so above. Inflorescence lateral, axillary, short racemose, up to 1.5 cm. long, the rachis hirtellous. Persistent sepals 4, minute, puberulent, ovate-deltoid, about 0.3 mm. long. Follicles 1 or 2, stipitate, the stipe 3 to 3.5 mm. long, the follicles ellipsoid, 3 to 3.5 mm. in diam., 4 to 4.5 mm. long, glandular; seeds subglobose, about 2.5 mm. in diam., black, shining.

Type in the University of Michigan Herbarium, Forrest Shreve 6727, collected 16 miles NE of Ures, on the road to Baviacora, Sonora, Mexico, Sept. 21, 1934, alt. about 900 m.

Z. sonorensis is very closely related to Z. Fagara (L.) Sargent, and probably represents a local desert segregate. It may be distinguished by the smaller hirtellous leaflets, puberulent sepals, and coarser pubescence throughout. The collection was distributed as a species of Bursera.

TRAGIA POTOSINA Lundell, sp. nov.

Volubilis; caules graciles. Petiolus 2.3--4.5 cm. longus, gracilis; limbus oblongus vel ovato-oblongus, 8--12.5 cm. longus, 3.5--7.3 cm. latus, acuminatus, basi cordatus, crenato-dentatus, basi 3- vel 5-nervius; stipulae ca. 5 mm. longae. Inflorescentiae eglandulosae, pedunculatae, pauciflorae, basi florem ♀ unicum gerentes, ceterum ♂. Sepala ♂ 3, stamina 3. Sepala ♀ 6, subaequalia. Capsula parva. Semina ca. 3 mm. diam., globosa.

A vine; stems slender, rather sparingly hairy. Petioles slender, 2.3 to 4.5 cm. long, pilose. Leaf blades oblong or ovate-oblong, 8 to 12.5 cm. long, 3.5 to 7.3 cm. wide, rather abruptly short-acuminate, base shallowly cordate and 3- or 4-veined, rather coarsely crenate-dentate, sparsely hispid above, hirtellous beneath with coarser hairs along veins. Inflorescence opposite the leaves, hirtellous, less than 2.5 cm. long, with long peduncle, each bearing one pistillate flower with staminate flowers above. Bracts of pistillate flowers 3-parted, those of staminate flowers simple, linear-lanceolate, about 2 mm. long, sparingly hispid. Pedicels of pistillate flowers about 1 mm. long, those of staminate flowers subequal, articulate slightly above base. Sepals of staminate flowers 3, ovate-elliptic, about 1.2 mm. long,

hispidulous outside. Stamens 3; filaments thick, apparently glandular, subequaling anthers. Sepals of pistillate flowers 6, linear-lanceolate, up to 3 mm. long, sparingly hispid, not glandular. Ovary hispid and glandular-hairy. Style connate to above the middle, obscurely rugulose. Capsule less than 1 cm. in diam. Seed globose, about 3 mm. in diam.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7200, collected in second growth on hillside, at Tamazunchale, San Luis Potosi, Mexico, July 13, 1937, alt. 200 m.

T. potosina is referable to the section Eutragia, and it has affinity with T. cordata Michx. The oblong leaves, eglandular small inflorescences, long peduncles, short pedicels, and small capsules and seeds are distinguishing characteristics.

DAVILLA MATUDAI Lundell, sp. nov.

Frutex scandens. Rami scabriusculi. Folia petiolata, petiolo 7--23 mm. longo, parce strigoso, chartacea, haud scabriuscula, elliptica vel obovato-elliptica, 6.5--12.5 cm. longa, 3.1--7.8 cm. lata, integra, apice rotundata vel raro apiculata, basi subcuneata, costa et vena parce substrigosa, venis lateralibus 9--14. Inflorescentia paniculata, parva, dense puberula, pauciflora. Pedicelli usque ad 7 mm. longi. Sepala ciliolata, minutissime scabriuscula, suborbicularia, 3 exteriora 2.4--3.5 mm. longa, 2 interiora usque ad 8 mm. longa. Petala 5, obovata. Stamina usque ad 5 mm. longa. Ovaria 1 vel 2, glabra.

A woody vine. Stems at first zigzag, slender, brown and puberulent, with age straight, dark red and finely scabrous. Petioles sparingly strigose, narrowly winged, usually 7 to 12 mm. long, sometimes up to 23 mm. long. Leaf blades chartaceous, smooth, elliptic or obovate-elliptic, 6.5 to 12.5 cm. long, 3.1 to 7.8 cm. wide, entire, apex rounded or rarely apiculate, base subcuneate and decurrent, sparingly hairy along costa above, and beneath along costa and main lateral veins, the hairs usually subappressed, costa and veins plane or slightly impressed above, prominent beneath, the main lateral veins 9 to 14, reticulation fine. Flowers in small panicles, the panicle branches densely puberulent, rather crowded. Pedicels slender, puberulent, up to 7 mm. long. Sepals microscopically scabrous, ciliolate, not pubescent, suborbicular, the smaller 3 from 2.4 to 3.5 mm. long, the inner 2 up to 8 mm. long, the innermost with strongly recurved margin. Petals 5, obovate, apparently emarginate. Stamens up to 5 mm. long, the filaments enlarged above, the anthers ovate-elliptic. Ovaries 1 or 2, glabrous, 1-celled, 2-ovulate; style elongate, 3 to 3.5 mm. long; stigma large, discoid. Fruits unknown.

Type in the University of Michigan Herbarium, Eizi Matuda 3647A, collected in forest, Javalinero, near Palenque, Chiapas, Mexico, July 6--9, 1939.

According to description, the affinity of D. Matudai is with the Brazilian D. multiflora St. Hil.

GILIBERTIA MATUDAI Lundell, sp. nov.

Arbor parva, 3 m. alta, glabra. Petioli 0.8--5 cm. longi. Lamina membranacea, oblanceolato-oblonga vel oblonga, 10--21 cm. longa, 4--9 cm. lata, apice obtuse acuminata vel late obtusa, basi cuneata, prominente sinuato-dentata. Umbellae racemosae, terminales.

A small tree, 3 m. high, glabrous throughout. Petioles slender, striate, inconspicuously canaliculate, 0.8 to 5 cm. long. Leaf blades membranaceous, oblanceolate-oblong or oblong, 10 to 21 cm. long, 4 to 9 cm. wide, apex obtusely short-acuminate or bluntly obtuse, base broadly cuneate, obtuse to acute, margin prominently sinuate-dentate with remote coarse obtuse or rounded teeth, pinnately veined, costa nearly plane above, elevated beneath, veins and veinlets prominulous beneath, reticulate on both surfaces. Umbels racemose, terminal, 6 to 9 in an inflorescence; the inflorescences less than 3.5 cm. long, short-pedunculate; bractlets fimbriate; stalks of the umbels up to 1.5 cm. long, bracteolate near the middle. Pedicels slender, about 5 mm. long. Flowers 5- or 6-merous. Calyx tube about 2.3 mm. long, 5- or 6-denticulate, the teeth deltoid, acutely apiculate. Petals thick, ovate-deltoid, 1.7 to 2 mm. long, acute. Anthers about 1 mm. long, equaling filaments.

Type in the University of Michigan Herbarium, Eizi Matuda 3152, collected in advanced forest at Reforma, near Balancan, Tabasco, Mexico, May 22--26, 1939.

Although G. Matudai obviously belongs to the complex of G. arborea (L.) March., it may be readily distinguished by its coarsely sinuate-dentate leaves.

(a) Papers from the University of Michigan Herbarium.

ADDITIONAL NOTES ON THE GENUS AEGIPHILA -- VI

Harold N. Moldenke

The following notes constitute a continuation of those

published in Phytologia 1: 182--208, 222--240, and 248--272 (1937), 289--304 (1938), and 364--368 (1939). The conclusion of the alphabetized list of citations [additional to those published in Brittonia 1: 472--477 (1934) and Phytologia 1: 301--304 (1938) and 364--368 (1939)] follows:

Mutis 305 (mollis, cotype coll. of A. Mutisii), 423 (mollis, cotype coll. of A. Mutisii), 782 (quinduensis), 857 (reticulata, type coll.), 985 (reticulata, type coll.), 2332 (bogotensis), 3660 (mollis, cotype coll. of A. Mutisii), 5191 (truncata, type coll.), s.n. (bogotensis, cotype coll.).

Natal Herb. 10,208 (panamensis); Nelson, E. W., 4245 (Deppeana, cotype coll. of A. pacifica), 4254 (Deppeana, cotype coll. of A. pacifica); Newman s.n. (conturbata, type coll.); Nicholls 94 (martinicensis); Niederlein 1705 (Hassleri); Nyst s.n. (Hassleri).

Orcutt 3057 (Deppeana), 3418 (Deppeana), 5622 (trifida); Ørsted 11,178 (panamensis), 11,180 (Deppeana), s.n. [1846] (martinicensis); Otero 78 (martinicensis), 199 (martinicensis), 308 (martinicensis).

Pabst 435 (australis); Paul 153 (panamensis); Pavon s.n. ["Mexique"] (Pavoniana); Peckolt 422 (Sellowiana); Pennell 3185 (Pennellii, type coll.), 7097 (bogotensis); Pennell, Killip, & Hazen 8667 (caucensis, type coll.); Perrottet s.n. [1820] (villosa), s.n. [1819] (laevis), s.n. [1820] (laevis), s.n. [18 Juin 1824] (martinicensis), s.n. [Juillet 1841] (martinicensis), s.n. [Jardin des Pl. de Paris, 1818] (martinicensis); Picard s.n. (martinicensis); Pickel 526 (pernambucensis), 3030 (pernambucensis), 3042 (pernambucensis, type coll.), 3642 (racemosa); Pittier, H., 288 (odonto-phylla, type coll.), 6782 (elata), 6815 (panamensis, type coll.), 7584 (aculeifera), 8257 (hirsutissima, type coll.), 8806 (quinduensis), 8806a (elata), 10,645 (pendula), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 16,711] (anomala, type coll.), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 16,034] (costaricensis), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 12,017] (elata); Pittier & Tonduz 6782 (elata), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 9167] (costaricensis, type coll.); Plée 172 (martinicensis), s.n. (elata); Poeppig 2158 (cordata, type coll.), 2314 (chrysantha, logotype coll.), s.n. [Collares] (macrantha); Pohl 1022 (splendens, type coll.), 4392 (Riedeliana, cotype coll.), s.n. [Herb. Imp. Vien. 151] (mediterranea), s.n. [Herb. Imp. Vien.] (Lhotzkiana), s.n. (Luschnathi); Poiteau s.n. (laevis), s.n. (villosa); Ponthieu s.n. [Ind. occid.] (martinicensis); Potter 5154 (laeta); Puiggari 3200 (obducta), 3225 (obducta); Purdie s.n. [Port Royal Mtns., Aug. 1843] (trifida), s.n. [Mt. Diablo, April, 1844] (foetida), s.n. [Summit of Quindiu] (bogotensis), s.n. (bogotens-

is), s.n. (elata); Purpus 6982 (falcata), 7521 (falcata).
 Quentin 17 (martinicensis).

Raben 749 (Luschnathi), 842 (casseliaeformis, type coll.), 876 (verticillata), s.n. (Luschnathi), s.n. (vitelliniflora); Raimondi 578 (filipes), 981 (filipes); Ramage s.n. [21 Jan. 1888] (pernambucensis), s.n. [April 24, 1888] (martinicensis), s.n. [Aug. 22, 1888] (martinicensis), s.n. [Sept. 23, 1888] (martinicensis), s.n. (martinicensis); Ravn s.n. (martinicensis); Read s.n. (martinicensis); Regnell 156 (Luschnathi), I.184 [1845] (Sellowiana), I.184 [1866] (Sellowiana), I.184 [1877] (Sellowiana), I.310 [1845] (verticillata), I.310 [1862] (verticillata), I.310 [1866] (verticillata), I.310x [1865] (Lhotzkiana), I.310x [1867] (Lhotzkiana), II.310 [1856] (verticillata), II.310 [1874] (verticillata); Rehder s.n. (elata); Richard, L. C., s.n. (glandulifera var. pyramidata, type coll.), s.n. (laevis), s.n. [S.-D.] (nervosa), s.n. (martinicensis); Ridley, H. N., s.n. (martinicensis); Riedel & Luschnath 1812 (Sellowiana); Riédle 202 (martinicensis), s.n. [Herb. A. L. Jussieu 5034a] (martinicensis), s.n. (martinicensis); Riley, L. A. M., 64 (laxiflora); Rimbach 118 (monticola, type coll.), 234 (Rimbachii, type coll.), 466 (bogotensis), 616 (ferruginea); Robert, A., 434 (verticillata); Rodriguez s.n. [Lillo 10,448] (mediterranea); Roig 1203 (elata); Rudio s.n. (vitelliniflora); Ruiz 187 (multiflora), 188 (cordifolia, type coll.); Ruiz & Pavon s.n. [Miña, Panatahua] (cordifolia, type coll.), s.n. [Pentahua & Chichao] (integrifolia, type coll. of Callicarpa globiflora), s.n. [Peruvia et Chili] (integrifolia), s.n. [Huassachuass & Pallao] (multiflora, type coll.), s.n. (multiflora); Rusby, H. H., 2472 (filipes, type coll. of A. oblongifolia), 2619 (multiflora, type coll. of Clerodendron bolivianum); Rusby & Pennell 701 (montana, type coll.); Rusby & Squires 316 (perplexa, type coll.); Batten-Pekelharing 40 (racemosa); Ryan s.n. (Deppeana), s.n. (integrifolia), s.n. (martinicensis).

Saer 602 (laeta); Sagot 473, in part (racemosa), 473, in part (glandulifera var. pyramidata), s.n. [Boura, 1858] (laevis), s.n. [Cayenne, Fevrier 1859] (laevis), s.n. [Cayenne, Mars 1859] (villosa), s.n. [Karovany, 1854--58] (racemosa), s.n. (membranacea); Sagra 360 (elata); Saint-Hilaire 2229 (Sellowiana), 2229 ter (Sellowiana), A.361 (fluminensis), A'.663 (fluminensis), A'.665 (fluminensis), C.50 (medullosa, type coll.), C'.1016 (verticillata), C'.1721 bis (Luschnathi), C'.1774 (obducta), s.n. [Itabura] (Sellowiana), s.n. (Lhotzkiana); Salzmann 432 (Lhotzkiana), s.n. [1831] (Lhotzkiana), s.n. (Lhotzkiana); Sartorius s.n. (Deppeana); Schiede 1165 (Deppeana, type coll.), s.n. [Estero, Jan. 29] (Deppeana); Schimpff 252 (monticola), 267 (bogotensis), 279 (chrysantha), 1003 (Schimpffii, type coll.); Schipp

1083 (monstrosa); Schlim 688 (longifolia, type coll.); Schomburgk, M. R., 404, in part (guianensis, type coll.), 404, in part (integrifolia), 772 (laxiflora, type coll.); Schott 4918 (Luschnathi); Schüch s.n. [Sebastianopolis] (vitelliniflora), s.n. (Sellowiana); Schunke 443 (pulcherri-
ma, type coll.); Schwacke 1465 (brachiata), 1939 (obducta), 3635 (bracteolosa), 5381 (fluminensis), 6594 (verticillata), 9556 (obducta), 9941 (verticillata), 11,264 (Sellowiana), 12,966 (Riedeliana), 13,098 (obducta), 13,726 (verticilla-
ta); Seemann 87 (magnifica), 335 (glandulifera); Seitz 61 (obovata), 92 (obovata); Sellow 9 (graveolens), 2189 (grave-
olens), 5122 (verticillata, type coll. of A. tomentosa), s. n. [Brasil] (fluminensis), s.n. (vitelliniflora), s.n. [flowers] (Sellowiana, cotype coll.), s.n. [fruit] (Sellowi-
ana, cotype coll.), s.n. (brachiata), s.n. (laevis), s.n. (Ihotzkiana), s.n. (obducta), s.n. (paraguariensis); Sessé, Mocino, Castillo, & Maldonado 603 (Deppeana), 1074 (Deppea-
na); Sinclair s.n. [Salango Isl.] (glomerata, type coll.); Sintenis 6492 (martinicensis), s.n. [L.89] (martinicensis), s.n. [1895] (martinicensis); Skinner s.n. (monstrosa); Skutch 2680 (panamensis); Smith, G. W., 93 (martinicensis); Smith, H. H., 329 (mollis var. intermedia, type coll.), 330 (laeta, type coll. of A. stricta); Smith, J. D., 2111 (falc-
ata, type coll.); Snethlage 109 (racemosa); Sodiro 22 (ferru-
ginea), 125 (ferruginea); Soubirou s.n. [Prés Cayenne] (laevis), s.n. (laevis); Spruce 342 (parviflora), 589 (par-
viflora, type coll.), 691 (integrifolia), 1013 (bracteolos-
a), 1283 (bracteolosa), 2296 (Spruceana, type coll.), 3113, in part (guianensis), 3113, in part (integrifolia), 4275 (peruviana, type coll.), 5473 (ferruginea, type coll.), 9473 [probably an error for 5473], s.n. [Aug. 1858] (ferruginea), s.n. [In vicinibus Santarem] (integrifolia); Standley, P.C., 37,570 (Standleyi, type coll.); Standley & Valerio 44,597 (costaricensis), 44,606 (costaricensis); Stehlé 1247 (mart-
inicensis), 2127 (martinicensis); Steinbach 3186 (bolivia-
na), 5066 (boliviana, cotype coll.), 6437 (boliviana, cotype coll.), 14,781 (mollis); Stephan s.n. [1843] (paraguariensis); Stevenson, D., 5 (pauciflora, type coll.); Stork 2230 (aculeifera), 2290 (anomala); Suringar s.n. [Puerto Cabello] (elata); Swabey s.n. [Trin. Bot. Gard. Herb. 12,232] (integ-
rifolia); Swainson s.n. (vitelliniflora), s.n. (pernambucen-
sis), s.n. (mediterranea); Swartz s.n. [Jamaica] (Swartziana, type coll.), s.n. [Jamaica] (trifida, type coll.), s.n. [Jamaica] (foetida, type coll.), s.n. (elata, type coll.), s.n. (nervosa, type coll.), s.n. (martinicensis).

Tafalla s.n. [Chicoplaya] (insignis, type coll.); Talbot s.n. (laevis); Tate 162 (Surfaceana, type coll.); Terrasson 62 (martinicensis); Tessmann 5863 (bracteolosa); Thompson, W. J., 6493 (elata), 8012 (elata); Tonduz 9293b (falcata),

13,629 (magnifica), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 13,629] (magnifica), s.n. [Herb. Instit. Physico-geogr. Nat. Costaric. 6782] (elata); Triana 375 (integrifolia), 2083, in part (Lehmannii), 3712 (grandis), 3713, in part (glandulifera var. pyramidata), 3713, in part (gualanensis), 3713, in part (elata), 3713, in part (Lehmannii), 3713, in part (membranacea), 3713, in part (mollis), 3743 (bogotensis), s.n. (grandis); Trin. Bot. Gard. Herb. 1899 (macrantha), 2389 (obovata, type coll. of A. dubia); Troll 1704 (integrifolia); Türckheim 4013 (fasciculata, type coll.), 7961 (elata).

Ule 335 (Lhotzkiana), 1520 (australis, type coll.), 4436 (Luschnathi), 4854 (mediterranea), 8293 (filipes), 9718, in part (elegans), 9718, in part (ovata), 9720 (cordata), 9721 (scandens, type coll.), 9723 (filipes), 9859 (cuneata), s.n. (obducta); United States Exploring Exped. [Wilkes] s.n. [Rio de Janeiro] (brasiliensis, type coll.), s.n. [Rio de Janeiro] (fluminensis); Usteri 20 (verticillata), 21 (verticillata).

Vahl s.n. [1796; Herb. A. L. Jussieu 5036] (integrifolia); Valerio, J., 148 (Valerii, type coll.); Versuchsanstalt Kamenun 270 (mediterranea); Vogl 1177 (mollis), 1179 (mollis), 1180 (mollis), 1181 (mollis), 1183 (mollis); Von Rohr 97 (Deppeana), s.n. [Cayenne] (villosa), s.n. (Deppeana), s.n. (elata), s.n. [Cayenne] (laevis); Von Seneloh 139 (fluminensis).

Waby 72 (martinicensis); Wachenheim 175 (villosa), 188 (membranacea), 484 (macrantha), 489 (macrantha); Wagner s.n. [Herb. Monac. 1007] (Deppeana); Warming 71 (barbadensis), 101 (barbadensis, type coll.), 291 (vitelliniflora), s.n. [Lagoa Santa] (verticillata), s.n. [Lagoa Santa] (Sellowiana), s.n. [Juli 1866] (fluminensis), s.n. [Ad Rio de Janeiro] (fluminensis), s.n. (Sellowiana); Weberbauer 4667 (longipetiolata, type coll.); Weddell 40 (fluminensis), 95 (fluminensis), 578 (vitelliniflora); "West Indies, Nov. 17-17" (martinicensis var. oligoneura); Widgren 1177 (Sellowiana), 1222 (verticillata), 1223 (mediterranea), II.1176 (Sellowiana), II.1176 1/2 (Sellowiana), s.n. (mediterranea); Wiles s.n. (elata); Williams, L., 5054 (Smithii, type coll.), 9120 (monstrosa), 9143 (elata), 9271 (elata), 9566 (elata); Williams, R. O., s.n. [Trin. Bot. Gard. Herb. 11,115] (obovata), s.n. [Trin. Bot. Gard. Herb. 12,026] (obovata), s.n. [Trin. Bot. Gard. Herb. 12,180] (obovata); Williams, Freeman, & Cheesman s.n. [Trin. Bot. Gard. Herb. 11,329] (integrifolia); Wilson, N., 224 (elata); Winkler, H., 628 (mediterranea); Wolle s.n. (Swartziana); Wright, W., s.n. (elata), s.n. (foetida), s.n. (martinicensis); Wullschlägel 405 (laevis), 423 (martinicensis), 424 (martinicensis), 974 (elata), 1364 (elata), 1983 (laevis).

Yuncker 4749 (elata).

Three additional generic synonyms are Egiphylla Jacq. ex Moldenke, Prelim. Alph. List Invalid Names 25, in syn. (1940), Stigmatococca Mart. ex Moldenke, Prelim. Alph. List Invalid Names 42, in syn. (1940), and Echiphylla Jacq., in herb. Gerth van Wijk in his "A Dictionary of Plant Names", page 30 (1911), records two additional common names for members of this genus: "Ziegenbäumchen" and "geitenboompje". The Ducke s.n. [Herb. Rio de Janeiro 35,661] distributed as a species of Aegiphila by the collector, is actually Rudgea Krukovii Standl. in the Rubiaceae. Standley in Field Mus. Publ. Bot. 10: 334 (1931) uses the name "aegiphilas" as a common name for members of this group, although "goatwoods" would certainly be preferable. His description of the group as being "shrubs or small trees with entire leaves", with "exserted stamens", "a corolla with spreading limb", and fruit which "is a fleshy drupe", is not true for the genus as a whole. Many species are low bushes, vines, or tall trees; most species have two types of flowers, one type with included stamens; the corolla is often infundibular; and the fruit is often dry and not at all fleshy. The generic description in Field Mus. Publ. Bot. 18: 993 (1938) is more accurate, but still is misleading in many respects. If generic descriptions in floras of circumscribed regions are drawn up from only the species represented in that region and are meant to apply only to those species (which may well be exceptional or even aberrant ones!), the author ought to plainly state this fact. Unless such a qualifying statement is given, it is natural for other workers to regard such generic descriptions as being actually generic descriptions and not just compilations of the characters of the few species of the genus inhabiting that particular area.

Since the bibliographic report given in Phytologia 1: 289 (1938) was drawn up, ten more papers referring to the genus have been reviewed and 3 more contributors added. It is worth noting that the generic name Amerina, cited by me in Brittonia 1: 250 and 280 (1934), should be accredited to "P. DC." The Gentle 3242 and 3246 distributed as a species of Aegiphila by Lundell, are actually Dermatocalyx parviflorus Drst. in the Scrophulariaceae.

The herbarium abbreviations herein employed are those explained in my original monograph of the genus in Brittonia 1: 249--250 (1934) and in previous supplements in Phytologia. Additional abbreviations herein used for the first time are "Ar" = United States National Arboretum, Washington, D. C.; "Dp" = DePauw University, Greencastle, Indiana; "Ha" = Colegio de La Salle, Vedado, Havana, Cuba; "Jo" = J. Cuatrecasas herbarium, Instituto Botanico, Bogotá, Colombia; "Lu" =

Botanisk Museum, University of Lund, Lund, Sweden; and "Po"-Pomona College, Claremont, California.

49a. *AEGIPHILA ACULEIFERA* Moldenke.

The species is described by A. Smith from living material as a tree 4-10 m. tall, its base to 42 cm. in diameter, its bark light-brown, with "reticulation" or distantly spaced large raised "dots"; terminal twigs with "lepidote scales"; cambium-layer pale-green; leaves rather flaccid or membranous and basally stiffened, glabrous, slightly shining and "polished" above, the venation "rather reticulated on under side"; inflorescence mostly terminal; peduncles and pedicels bright-green or gray-brown, the former with "lepidote scales"; flower-buds clavate, opening campanulate, the small ones gray-brown; calyx bright- or pale-green, "pointed", short-pubescent; petals "opening flat", "indifferently 4 or 5", pure white; stamens short, shorter than the style, included; style white, elongate, longer than the stamens, exserted; immature fruit hard and green, round, flat-topped. Standley in *Field Mus. Publ. Bot.* 18: 994 (1938) describes the leaves as obovate-oblong, the cymes mostly as long as the petioles or shorter, densely stellate-furfuraceous, the calyx somewhat bilabiate, its lobes 2 mm. long, and the corolla-tube 8 mm. long, with its lobes 6 mm. long. He comments on the fact that the recurved prickles which cover the branchlets and peduncles of the type collection are not in evidence in the Costa Rican material. They are, however, very numerous and conspicuous on the peduncles and inflorescence-branches of the Sneider collection cited below, on which they are also found to some extent on the tips of the twigs and on the petioles.

The species has been collected at altitudes of 1500 m. in Colombia and 1500-2200 m. in Costa Rica, and in anthesis also in April and August. A. Smith reports the style as "bifurcated", but actually it is the stigma which is bifid. He states that the species inhabits the subtropical zone in Costa Rica, found at the edges of forests in semi-shade, in wet mouldy soil mixed with loam. Sneider reports it as an inhabitant of the primeval forest.

Additional citations: COSTA RICA: Alajuela: Skutch 3255 (N); A. Smith 989 (N-3), 1037 (N-3). COLOMBIA: El Cauca: Sneider 1661 (S).

42a. *AEGIPHILA AMAZONICA* Moldenke, *Geogr. Distrib.* 24, nom. nud. (1939), sp. nov.

Frutex vel arbor; ramulis argute tetragonis dense adpresso-strigosis; petiolis dense flavido-strigosis; laminis submembranaceis ellipticis vel obovatis acutis vel breviter acuminatis, integris, ad basim cuneato-attenuatis, subtus

densiuscule breviterque pubescentibus vel velutinis; inflorescentiis axillaribus cymosis dense multifloris.

Shrub or small tree to 3 m. tall; branchlets and twigs medium-stout, very sharply tetragonal, often pronouncedly flattened, densely appressed-pubescent with short and strigose or felt-like grayish or yellowish pubescence; pith large; nodes not annulate, often somewhat flattened; buds densely yellow-velutinous or -villous; principal internodes 1.5--10 cm. long, sometimes abbreviated to 3 mm.; leaves decussate-opposite; petioles rather slender, 0.7--3 cm. long, or very greatly abbreviated on young twigs, densely appressed-pubescent with short an yellowish strigose hairs; blades submembranous or thin-chartaceous, dark-green and brunescent (in drying) above, lighter beneath, elliptic or obovate, 3.5--18 cm. long, 2--6 cm. wide, acute or short-acuminate at apex, entire, cuneately narrowed and long-attenuate into the petiole at base, finely puberulent above when young, glabrescent when mature, rather densely short-pubescent with grayish or yellowish hairs beneath, subvelutinous when immature, the hairs on the lower surface bulbous-based; midrib rather stout, flat above, very large and prominent beneath; secondaries slender, 8--14 per side, arcuate-ascending, flat or subprominulous above, prominulous beneath, arcuately joined in many loops near the margins beneath; inflorescence axillary, opposite, sparse, cymose; cymes solitary in each axil, densely many-flowered, 3--6.5 cm. long, 2--5 cm. wide, many times dichotomous, its branches similar to the peduncles in color, texture, and pubescence; peduncles slender, 1.5--4 cm. long, densely short-pubescent with yellowish or grayish strigose hairs; pedicels slender, elongate, 3--5 mm. long, densely strigose-pubescent; bracts and bractlets absent; prophylla minute, hidden by the pubescence; calyx infundibular, about 5.8 mm. long, 1.2 mm. wide to above the ovary, about 3 mm. wide at apex, lightly appressed-puberulent or short-strigose on the outer surface and often marked with scattered glandular disks above, its rim deeply 4-lobed, the lobes equal, regular, about 1.9 mm. long and 1.4 mm. wide, acute at apex; corolla white, hypocrateriform, its tube rather slender, about 6.3 mm. long, 0.9 mm. wide at base, abruptly ampliate to 3 mm. at apex, glabrous, the limb spreading, 4-parted, its lobes ovate-lingulate, about 3 mm. long and 1.5 mm. wide at base, obtuse at apex; stamens 4, inserted about 0.5 mm. below the mouth of the corolla-tube, long-exserted; filaments filiform, 5--6 mm. long, glabrous; anthers oblong, about 1 mm. long and 0.5 mm. wide, dorsifixed just below the middle, bilobed at base; pistil slightly exserted; style capillary, about 5 mm. long, glabrous; stigma bifid, its branches about 1 mm. long; ovary subglobose, about 0.8 mm. long and wide, glab-

rous.

The type of this species was collected by João Geraldo Kuhlmann [Herb. Rio de Janeiro 22,546] in a secondary forest at Manés, Amazonas, Brazil, on March 17, 1924, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is closely related to A. integrifolia.

Citations: BRAZIL: Amazonas: J. G. Kuhlmann s.n. [Herb. Rio de Janeiro 3386] (N), s.n. [Herb. Rio de Janeiro 22,546] (N--type); Pará: Ducke s.n. [Herb. Rio de Janeiro 14,281; Herb. Amaz. Mus. Para. 4738] (N), s.n. [Herb. Rio de Janeiro 18,952] (N).

6. AEGIPHILA ANOMALA Pittier.

Standley in Field Mus. Publ. Bot. 18: 994 (1938) gives the following additional characters: a shrub or small tree of 4.5 m., the branches densely ochraceous-puberulent; leaves short-petiolate, the blades oblanceolate or oblong-obovate, mostly 10--20 cm. long, acute or abruptly short-acuminate, long-attenuate to the base, densely and minutely puberulent on both surfaces; cymes small and dense, 3 cm. long or less, the branches densely puberulent; calyx densely puberulent, 3--5-lobate; corolla salver-form; fruit globose, about 1 cm. in diameter. He quotes Austin Smith as stating that the species grows at altitudes of 1700--1950 m., on clay ridges in open forests; a tree 11--15 m. tall, of open growth, the trunk 45--60 cm. in diameter, the bark brown, cork-like in structure, well-sutured, thick; cambium-layer cream-yellow; leaves soft and rather lax, light-green, velvety to the touch; flower-buds buffy-yellow; and the corolla pure white. The Austin Smith material, said by Standley to represent this species and collected about Zarco, has not been seen as yet by the present writer.

70. AEGIPHILA BARBADENSIS Moldenke.

Additional citations: BARBADOS: Warming 101 (Mi--photo of type).

3. AEGIPHILA BOGOTENSIS (Spreng.) Moldenke.

The binomial "Amerina tomentosa", cited by me in Brittonia 1: 283 (1934), should be accredited to "(H.B.K.) P. DC." The Schimpff 252 material in the Berlin (2 sheets), Delessert, and Britton herbaria, cited in Phytologia 1: 188 (1937) as this species, is actually A. monticola.

Additional citations: COLOMBIA: Department undetermined: Mutis 5774 (W).

80. AEGIPHILA BOLIVIANA Moldenke.

This binomial is erroneously written "Aegiphila boliviana" in Brittonia 1: 391 (1934). The species has been collected

at 450 m. altitude, in anthesis in September, and has been confused with A. martinicensis.

Additional citations: BOLIVIA: Santa Cruz: Steinbach 2799 (N), 3116 (N), 5066 (Mi--photo of cotype).

23. AEGIPHILA BRACHIATA Vell.

An additional synonym is Aegiphila Glazioviana Taub. ex Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940). The species is listed as A. triantha by Herter in Revist. Sudam. Bot. 4: 185 (1937).

120. AEGIPHILA BRACTEOLOSA Moldenke.

The flowers of this species are described as white. It has been collected in anthesis in March.

Additional citations: BRAZIL: Amazonas: Ducke 444 (S); Spruce s.n. [In vicinibus Barra] (Lu).

99. AEGIPHILA CANDELABRUM Briq.

The species has been collected in anthesis in November.

Additional citations: PARAGUAY: Hassler 7974 (F).

40. AEGIPHILA CAPITATA Moldenke.

Additional citations: BRAZIL: São Paulo: Burchell 3547 (Mi--photo of isotype).

98. AEGIPHILA CHRYSANTHA Hayek.

An additional synonym is Aegiphila lutea Poepp. ex Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940). The specimen cited below is noteworthy in possessing a binary leaf -- one with two apexes!

Additional citations: ECUADOR: Manabi: Eggers 14,838 (Lu).

112. AEGIPHILA CORDATA Poepp.

Additional citations: PERU: Loreto: Poeppig 2158 (Mi--photo of type).

112a. AEGIPHILA CORDATA var. COLOMBIANA Moldenke, Geogr.

Distrib. 18, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit foliis distincte petiolatis; laminis ad basim acutis, ad apicem longe acuminatis; cymis parvioris minus densis, distincte stipitatis non valde bracteolatis; floris albis.

This variety differs from the typical form of the species in its leaves being acute at base, long-acuminate at apex, distinctly petiolate, the hairs on the branchlets shorter, the cymes smaller, less dense, distinctly stipitate, not plainly bracteolate, and the flowers white.

The type of this variety was collected by Oscar Haught (no. 1885) in the vicinity of Barranca Bermeja, alt. 100--

500 m., Magdalena valley, between Sogamoso and Colorado River, on June 16, 1936, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is described as an abundant scrambler in second-growth forests, about 10 m. tall, with rather conspicuous white flowers.

Citations: COLOMBIA: Santander Sur: Haught 1885 (N--type).

113. *AEGIPHILA CORDIFOLIA* (Ruíz & Pav.) Moldenke.

The species has been confused with and distributed as *A. Mutisii* H.B.K.

Additional citations: PERU: Huanuco: Macbride 3922 (N); Department undetermined: Ruíz & Pavon s.n. [Miña, Panatahua] (Mi--isotype).

10. *AEGIPHILA COSTARICENSIS* Moldenke.

A tree to 8 m. tall, the trunk to 15 cm. in diameter at breast height; branches glabrous; leaf-blades attenuate to the base; corolla white.

The Tonduz and the Pittier & Tonduz specimens cited by me from Bocas del Toro, Panama, in Brittonia 1: 295 (1934) and Phytologia 1: 196 (1937), were actually collected in Cartago, Costa Rica, according to a letter from Dr. Henri Pittier quoted under *A. falcata* in these supplementary notes, and the numbers are in each case Herb. Instit. Physico-geogr. Nat. Costaric. numbers. This means that the species is as yet unknown from Panama. Standley in Field Mus. Publ. Bot. 18: 994--995 (1938) cites the type collection as "Pittier & Tonduz 9167". He gives the species' distribution in Costa Rica as "Pacific tierra caliente and probably also in the Atlantic". It ascends to 2400 feet in Guatemala, blooming in December. The Skutch collection cited below was originally distributed as "*Vitex* sp."

Additional citations: MEXICO: Chiapas: Matuda 2101 (Mi, N). GUATEMALA: Quezaltenango: Skutch 2012 (N, W).

35. *AEGIPHILA CRENATA* Moldenke.

Additional citations: BRAZIL: Paraná: Dusén 16,238 (Lu).

9. *AEGIPHILA CUNEATA* Moldenke.

Additional citations: PERU: Loreto: Killip & Smith 28,386 (Mi--photo of isotype).

41. *AEGIPHILA DENTATA* Moldenke.

The species is listed by Hoehne in his "Resenha Historica para a Commemoracão do Vigésimo Anniversario da Seccão de Botanica e Agronomia annexa ao Instituto Biologico de São Paulo", pages 153 and 157 (1937).

117. *AEGIPHILA DEPPEANA* Steud.

The synonymous binomial, Aegiphila brachiata, cited by me in Brittonia 1: 450 (1934), should more properly be accredited to "Schlecht. & Cham." instead of "Cham. & Schlecht." The Dugand & Mina collection cited by me in Phytologia 1: 291 (1938) as from an undetermined department of Colombia, was actually collected in the Panama Canal Zone, although the labels read "Juan Mina, Colombia". These collectors describe the flowers as "small, tubular, reddish". Standley in Field Mus. Publ. Bot. 18: 995 (1938) states that the species is sometimes subsacandent, with short-petiolate leaves, whose blades are cuneate at the base.

Additional citations: PANAMA: Canal Zone: Dugand & Mina 950 [Mus. Yale School of Forestry 32,382] (N, Y). COLOMBIA: Atlántico: Elias 1621 (N).

27a. AEGIPHILA DUCKEI Moldenke, Geogr. Distrib. 24, nom. nud. (1939), sp. nov.

Arbor; ramulis obtuse tetragonis densissime adpresso-pubescentibus glabrescentibus; petiolis abbreviatis strigosis plusminus marginatis; laminis tenuiter chartaceis obovatis abrupte breviterque acuminatis integris, ad basim cuneatis, supra plusminus pulverulentis, subtus minutissime puberulentibus; inflorescentiis axillaribus cymosis multifloris.

Small tree; branchlets medium-slender, obtusely tetragonal, very densely appressed-pubescent when young with yellowish felt-like strigose hairs, glabrescent in age; nodes not ampliate, not annulate; leaf-scars on older branchlets large and corky, semicircular; principal internodes 1--3 cm. long; leaves decussate-opposite; petioles rather slender, abbreviated, 5--15 mm. long, flattened above, densely strigose-pubescent beneath, less densely so above, more or less margined; blades thin-chartaceous, dark-green above, lighter beneath, obovate, 7.5--13 cm. long, 3.5--6 cm. wide, abruptly short-acuminate at apex (the acumination itself sharp-pointed or rounded), entire, cuneate at base and prolonged into the margined petiole, more or less pulverulent above (sometimes with very tiny obscure hairs interspersed), very minutely puberulent beneath with tiny scattered appressed hairs; midrib rather stoutish, flat above, very large and prominent beneath; secondaries slender, 8--12 per side, arcuate-ascending, flat or subprominulous above, prominulous beneath, obscurely joined at the margins; inflorescence axillary, cymose; cymes solitary in the uppermost axils, opposite, 6--11.5 cm. long, 2.5--3.5 cm. wide, several times dichotomous, many-flowered; peduncles very slender, elongate, 3--6.4 cm. long, densely strigose-pubescent with whitish or yellowish appressed pubescence; pedicels slender, 1--3 mm. long, densely velutinous with short appressed hairs; bracts

rather large, a pair at each principal cyme-furcation, stipitate, oblanceolate, 1--2 cm. long, 2--3 mm. wide, lightly pulverulent-puberulent; bractlets numerous, conspicuous, spatulate, 4--8 mm. long, 1--1.8 mm. wide; calyx infundibular, about 6.3 mm. long, about 1.7 mm. wide to above the ovary and 3 mm. wide at apex, densely strigose-pubescent, its rim truncate, 4-apiculate; corolla infundibular, white, its tube narrow-cylindric, about 10 mm. long and 1 mm. wide at base, abruptly ampliate to 4 mm. at apex, densely pulverulent-puberulent outside (especially above the calyx), its limb 4-parted, its lobes regular, erect, ovate-lingulate, about 4.9 mm. long and 2.4 mm. wide, subacute or obtuse at apex, densely pulverulent-puberulent outside; stamens 4, inserted about 3 mm. below the mouth of the corolla-tube, long-exserted; filaments flattened, about 10 mm. long, glabrous; anthers broadly oblong, about 1.7 mm. long and wide, dorsifixed below the middle, bilobed at base; pistil included; style capillary, about 5.4 mm. long, glabrous; stigma deeply bifid, its branches about 3.4 mm. long.

The type of this species was collected by my esteemed friend and colleague, Dr. Adolfo Ducke [Herb. Rio de Janeiro 35,662] -- in whose honor it is respectfully named -- in a non-inundated forest at Igarapé Macacuny, near Cucuhy, on the Rio Negro, Amazonas, Brazil, on September 20, 1935, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is apparently related to A. Lehmannii of Colombia.

Citations: BRAZIL: Amazonas: Ducke s.n. [Herb. Rio de Janeiro 35,662] (N--type).

124. AEGIPHILA ELATA Sw.

Standley in Field Mus. Publ. Bot. 10: 334 (1931) and 18: 995 (1938) and various collectors on their labels have added a few more items to the composite description of the species: It is sometimes a medium-sized shrub of bushy habit of growth or a subscandent shrub; stem to 3 inches in diameter; branches sometimes long and trailing; leaf-blades varying to broadly elliptic, abruptly short-acuminate at apex, obtuse at base, glabrous or nearly so on both surfaces or appressed pilose beneath along the veins or almost glabrous; cymes often forming a rather large and open panicle; corolla varying from cream-colored to yellowish-white, pale-yellow, or greenish-yellow; fruit bright-orange or deep-yellow, to 1 cm. in diameter, often borne in large clusters 4--6 inches long. It inhabits brushy slopes, forests, moist soil at the margins of swamps, wet thickets, high ridges, sides of creeks, savannas, advanced forests, wooded swamps, and coastal thickets. Gentle found it in "acahual" areas and Standley in "tierra caliente". It has been collected at alti-

tudes of from 30 to 1000 m., in fruit in January, March, June to August, and October. It is called "tall aegiphila" by Lindley. Schipp describes the species as "common" at some localities in British Honduras and "occasional" in others. It is cultivated in the Plant Introduction Garden at Miami, Florida, source of seed unknown. It is recorded by Yuncker in Field Mus. Publ. Bot. 9: 329 (1940).

The Kegel 687 cited by Pulle in his Enum. Vasc. Pl. Surin. 403 (1906) is actually A. laevis. The Steinbach 3259 cited by me in Brittonia 1: 466 (1934) and Phytologia 1: 199 (1937) with a question-mark, proves on closer examination to be A. Herzogii. Therefore, A. elata is not now known to occur in Bolivia and should be removed from my lists of species known from that country. The binomial, Aegiphila macrophylla H.B.K., cited by me in Brittonia 1: 462 (1934) as a synonym, was published in 1818, not in "1817" as stated on that page, and the "Aegiphila macrophylla Rich." on the same page should more accurately be accredited to "A. Rich." An additional synonym is Aegiphila macrophylla H.B.K. ex Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940).

Additional citations: CUBA: Santa Clara: Luna 493 (Ha); Oriente: Acuña 9866 (Es); León 10,872 (Ha), 12,199 (Ha); León, Clement, & Roca 10,431 (Ha); León & Seifritz 18,185 (N). MEXICO: Tabasco: Matuda 3031 (N), 3081 (N), 3406 (N). HONDURAS: Atlántida: Yuncker 4749 (Dp); Yuncker, Koepfer, & Wagner 8377 (Dp, Mi, N). BRITISH HONDURAS: Gentle 2633 (N--2), 2843 (N), 3047 (N). CULTIVATED: Florida: Dade Co.: Pope-noe 32 (Ar--2).

121. AEGIPHILA ELEGANS Moldenke.

Additional citations: BRAZIL: Amazonas: Krukoff 8701 (Kr).

101. AEGIPHILA ELONGATA Moldenke.

Additional citations: BOLIVIA: La Paz: Buchtien 1645 (Mi--photo of type).

21b. AEGIPHILA EXIGUIFLORA Moldenke, Geogr. Distrib. 24, nom. nud. (1939), sp. nov.

Arbor; ramulis obtuse vel subacute tetragonis dense furfuraceo-farinaceis vel tomentosis; petiolis valde abbreviatis vel subobsoletis; laminis firme chartaceis late ellipticis vel oblanceolatis vel ovatis acutis vel brevissime acuminatis integris, ad basim longe cuneatis vel abrupte acuminatis, supra adpresso-pubescentibus vel pulverulentis et nigropunctatis, subtus dense vel sparse brunneo-tomentosis; inflorescentiis axillaribus abbreviatis subcapitatis paucifloris.

Small tree with corky bark; branches obtusely tetragonal,

gray, somewhat flattened and ampliate at the nodes, with small white pith, pulverulent or glabrescent; branchlets more slender, obtusely or subacutely tetragonal, densely furfuraceous-farinaceous or tomentose with yellowish or brown pubescence; leaf-scars rather large and corky; nodes not annulate; principal internodes 1.2--3 cm. long; leaves decussate-opposite; petioles very much abbreviated or subobsolete, 1--4 mm. long, stout, margined, densely furfuraceous pubescent or tomentose with brown hairs, flat above; blades firmly chartaceous, uniformly dark-green on both surfaces, shiny above, broadly elliptic or oblanceolate, varying to ovate, 4.5--13 cm. long, 2.4--6.8 cm. wide, acute or very shortly acuminate at apex, entire, varying from long-cuneate to shortly and very abruptly acuminate at base, varying from appressed-pubescent with short yellowish strigose hairs above when very immature to merely pulverulent and black-punctate when mature, sparsely or densely brownish-tomentose beneath; midrib stoutish, sharply prominulous above, rounded-prominent beneath; secondaries very slender, 6--13 per side, arcuate-ascending, prominulous on both surfaces, not plainly joined at the margins; veinlet reticulation coarse, the larger portions prominulous on both surfaces; inflorescence axillary; cymes abbreviated, subcapitate, 1--2 cm. long, 8--15 mm. wide, several-flowered, rather dense, solitary in the upper axils on young branchlets, opposite; peduncles very slender or subfiliform, to 1 cm. long, sometimes subobsolete, furfuraceous; pedicels filiform, 1--4 mm. long; calyx campanulate, about 3.4 mm. long, about 0.9 mm. wide to apex of the ovary, ampliate to 3.1 mm. at the rim, densely furfuraceous-puberulent outside, its rim truncate, minutely 4-apiculate; corolla small, its tube narrow-cylindric, about 5 mm. long, about 0.7 mm. wide at base and ampliate to 1.7 mm. at apex, its limb not seen; stamens 4, inserted about 1.4 mm. below the mouth of the corolla-tube; filaments filiform, glabrous; style capillary, glabrous; ovary tetragonal, about 0.7 mm. long and wide, 4-lobed and umbilicate at apex, glabrous; fruiting-calyx greatly enlarged and indurated, 4--5 mm. long, 6--8 mm. wide, pulverulent-puberulent, its rim truncate, irregularly and shallowly incised.

The type of this species was collected by Adolfo Ducke [Herb. Rio de Janeiro 18,951] on a high campo, Campos do Jutahy, between Almeirim and Prainha, Pará, Brazil, in flower in September, 1923, and in fruit on April 13, 1923, and is deposited in the Britton Herbarium at the New York Botanical Garden.

Citations: BRAZIL: Pará: Ducke s.n. [Herb. Rio de Janeiro 18,951] (N-type).

Standley in Field Mus. Publ. Bot. 18: 995 (1938) adds the following items to the composite description of the species: Shrub; branches glabrous; leaves opposite, their blades often somewhat falcate, glabrous on both surfaces; cymes axillary and forming large, terminal, thyrsoid panicles; pedicels 3 mm. long or less; calyx acutish at base, puberulent; corolla pale-yellow, its lobes 6 mm. long. He records it as inhabiting the "Atlantic tierra caliente". The species has been collected at altitudes of 1100--2050 feet. The authority name is often abbreviated "J. D. Sm."

The H. Pittier 8643 and the Tonduz 8627, 9292, 9293, and 9293b cited by me in Brittonia 1: 364 and in Phytologia 1: 200 (1937) as from Bocas del Toro, Panama, were actually collected in Cartago, Costa Rica, according to a letter received by me from Dr. Pittier on February 28, 1939. Dr. Pittier states definitely that the new boundary between the two countries did not change the status of the localities in which he and Tonduz collected. All these localities are still in Costa Rica. He states also that the numbers of these collections and of the ones cited as "H. Pittier 11,244" and "13,216" are actually Herb. Instit. Physico-geogr. Nat. Costaric. numbers and should be so cited. They are not collectors' numbers.

Additional citations: GUATEMALA: Retalhuleu: J. D. Smith 1479 (Mi--photo).

15. AEGIPHILA FASCICULATA Donn. Sm.

This binomial is sometimes erroneously accredited to H.B. K.!

31. AEGIPHILA FERRUGINEA Hayek & Spruce.

Collectors have furnished the following additional items for the composite description of the species: a wide-spreading tree or tree-like shrub, 3--6 m. tall, "said to grow to a large tree, with wood excellent for cabinet work" (Mexico); leaf-blades dark dullish-green above, greenish-brown tomentose beneath; calyx light-green; corolla white within, greenish-white outside; fruit green and hard. It has been collected at altitudes of 2700--4300 m., in flower and fruit in June, sometimes found along roadsides. A vernacular name is "valso".

Additional citations: ECUADOR: Carchi: Mexia 7446 (Ar); Pichincha: Firmin 632 (F, Mi--photo); Penland & Summers 939 (N); Spruce 5473 (Lu--isotype); Chimborazo: Rimbach 616 [Mus. Yale School of Forestry 31,994] (N).

63. AEGIPHILA FILIPES Mart. & Schau.

Ducke records the following additional notes about this species, saying it is a small tree, with aromatic leaves and

white flowers, blooming in December.

Additional citations: BRAZIL: Amazonas: Krukoff 8041 (Kr), 8042 (Kr); Spruce 1761 (Lu); Pará: Ducke s.n. [Herb. Rio de Janeiro 22,550] (N).

28. *AEGIPHILA FLUMINENSIS* Vell.

Ducke describes the species as a "scandent shrub".

Additional citations: BRAZIL: Rio de Janeiro: Ducke s.n. [Herb. Rio de Janeiro 601] (N); State undetermined: Wied-Neuwied s.n. [Brasilia] (Lu).

68. *AEGIPHILA GLABRATA* Moldenke.

Additional citations: PERU: Junín: Killip & Smith 25,503 (M1--photo of type).

62. *AEGIPHILA GLANDULIFERA* Moldenke.

Standley in Field Mus. Publ. Bot. 18: 996 (1938) adds the following items to the composite description of this species: inflorescence-branches glabrous or puberulent; calyx almost 2 mm. long; corolla yellow or pale-yellow, its tube almost 8 mm. long, its lobes 4.5 mm. long. It has been collected in anthesis in September.

Additional citations: PANAMA: Canal Zone: P. White 255 (N). COLOMBIA: Santander Sur: Dawe 472 (I--photo of isotype, M1--photo of type).

62a. *AEGIPHILA GLANDULIFERA* var. *PARAËNSIS* Moldenke.

Kuhlmann describes this variety as a shrub, with ochraceous flowers, growing in secondary forests, blooming in October.

Additional citations: BRAZIL: Acre Territory: J. G. Kuhlmann s.n. [Herb. Rio de Janeiro 22,545] (N).

32. *AEGIPHILA GOELDIANA* Huber & Moldenke.

Scandent shrub; branchlets very stout, apparently glabrous, but uniformly white pulverulent-dotted under the hand-lens, the outer bark very papery and soon peeling off; principal internodes to 7 cm. long; blades varying to suborbicular, 6--9.5 cm. long, 6--8 cm. wide; inflorescence red.

The type of this remarkable species was collected by Goeldi at Peixeboi on the railroad between Belem do Pará and Braganca on March 14, 1907. The number "8166" is actually an herbarium number instead of being a collector's number as implied by me in Brittonia 1: 323 (1934) and Phytologia 1: 204 (1937).

Additional citations: BRAZIL: Pará: Goeldi s.n. [Herb. Amaz. Mus. Para. 8166; Herb. Rio de Janeiro 35,664] (N--isotype).

19. AEGIPHILA GRAVEOLENS Mart. & Schau.

Contrary to what is stated in Brittonia 1: 305 (1934), this species is based not on one collection (Lund 796), but also on several collections of Martius, Riedel, and Sellow -- unless the presence of only the Lund specimen in the De Candolle Herbarium at Geneva is to be taken as indicating that it is the type specimen. Unless this view is taken, the Martius 120 and s.n. and Lund 796 specimens cited in Phytologia 1: 206 (1937) and 1: 292 (1938) and probably some of the Riedel and Sellow specimens cited there and in Brittonia 1: 305 (1934) are actually cotypes.

43. AEGIPHILA GUIANENSIS Moldenke.

Additional citations: BRITISH GUIANA: M. R. Schomburgk 404, in part (Mi--photo of type).

22. AEGIPHILA HASSLERI Briq.

The species is listed as "Aegiphila triantha" by Herter in Beih. Bot. Centralbl. 59: 275 (1939), but Latzina in Trab. Inst. Bot. y Farm. Buenos Aires 54: 112 (1935) lists it correctly. Rodriguez describes the flowers of the species as white.

The "Banara umbraticola Arech." mentioned by Jorge Chebataroff in Revist. Sudam. Bot. 5: 166, 167, & 170 (1938) and figured in fig. 2 on page 167, is actually Aegiphila Hassleri, but does not agree with the description by Arechavaleta [Anal. Mus. Montev. 2: 280 (1899) and Arech., Fl. Urug. 2: 108 (1903)] in many important respects, so probably is merely a case of misidentification. The true Banara umbraticola is a member of the Flacourtiaceae. The Chebataroff specimen cited below was originally distributed as "Banara umbraticola" by Herter. Aegiphila Hassleri ascends to 250 m. in Uruguay, collected in fruit in February.

Additional citations: PARAGUAY: Balansa 2085 (Lu). ARGENTINA: Misiones: D. Rodriguez 566 (N), s.n. [Herb. Mus. Argent. Cienc. Nat. 23, 983] (N). URUGUAY: Chebataroff s.n. [Herb. Herter 1885a and 99, 551] (K).

95. AEGIPHILA HERZOGII Moldenke.

The Steinbach 3259 (B, F, Z--photo) cited by me in Brittonia 1: 466 (1934) and Phytologia 1: 199 (1937) as A. elata, is actually A. Herzogii. The species ascends to 450 m. and is described as a shrub 3--4 m. tall, with yellowish flowers, blooming in February.

Additional citations: BOLIVIA: Santa Cruz: Herzog 1369 (Mi--photo of isotype); Steinbach 3259 (N).

86. AEGIPHILA HIRSUTISSIMA Moldenke.

Killip and Garcia state that the species is a shrub, in-

habiting dense forests at altitudes of 50--100 m., with pendent fruiting-branches, a green calyx, and yellow fruit in February. It is listed by Pittier in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939).

Additional citations: COLOMBIA: Chocó: Killip & García 33,563 (N--fragment & photo, W, Z--photo).

115a. AEGIPHILA HOEHNEI Moldenke.

The species is listed by Hoehne in his "Resenha Historica Secç. Bot. Inst. Biol. S. Paulo", pages 153 and 157 (1937).

42. AEGIPHILA INTEGRIFOLIA (Jacq.) Jacks.

Collectors describe the species as a small tree or subscandent shrub, with greenish-white buds, inhabiting second-growth forests, dense forests, out-over woods, and the borders of forests. It has been collected in anthesis also in July, and at altitudes of 70--100 m. in Colombia and 400--650 m. in Ecuador. The vernacular name "bois de golette" is recorded by H. L. Gerth van Wijk in his "A Dictionary of Plant Names" (1911 & 1916) and the species is listed by Pittier in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939) and by Martyn in his "Index of the Phanerogamae in the Jenman Herbarium", page 461, mss. (1937).

Additional citations: COLOMBIA: Chocó: Killip 35,495 (N). ECUADOR: Napo-Pastaza: Mexia 7173 (Ar), 7187 (Ar), 7289 (Ar). BRAZIL: Amazonas: Ducke s.n. [Herb. Rio de Janeiro 35,663] (N); Poeppig 1615 (Ml--photo); Pará: Spruce 3113 (Lu). BOLIVIA: La Paz: M. Bang 584 (Lu); Buchtien 719 (Lu--2).

44. AEGIPHILA INTERMEDIA Moldenke.

Ducke describes the species as a small tree, with white flowers, blooming in January.

Additional citations: BRAZIL: Amazonas: Ducke 136 (N, S).

82. AEGIPHILA KILLIPII Moldenke.

Additional citations: COLOMBIA: Santander Norte: Killip & Smith 20,870 (Ml--photo of type).

53. AEGIPHILA LAETA H.B.K.

Dugand describes the species as a rather large shrub, 4 (sometimes 6) meters tall, inhabiting forests at altitudes of 100--200 m.; the fruits orange when unripe, bright red when ripe, fruiting in October. He records the vernacular name "San Juan de la Verdad". Haught describes the flowers as pale-yellow, in January. White describes his specimen as a plant 4 feet tall, with "green" and faintly fragrant flowers, in September. The Pennell 3689 (G, N) cited by me in Brittonia 1: 382 (1934) as A. martinicensis, is actually A.

laeta and thus adds an Antioquia, Colombia, record for the species.

Additional citations: PANAMA: Canal Zone: Gene White 175 (N). COLOMBIA: Atlántico: Dugand G. 1149 (F); Cundinamarca: Haught 2148 (N).

78. AEGIPHILA LAEVIS (Aubl.) Gmel.

An additional synonym is Aegiphila sarmentosa L. C. Rich. ex Moldenke, Prelim. Alph. List Invalid Names 3, in syn. (1940). On the same page of this work the binomial "Aegiphila levis", mentioned in Phytologia 1: 229 (1937), is accredited to Vahl and to "(Aubl.) Gmel.", and the binomial "Aegiphila laevis" is accredited to Vahl. The vernacular name "manprasara" is recorded for the species.

Additional citations: FRENCH GUIANA: Aublet s.n. (Mi--photo of isotype).

47. AEGIPHILA LANATA Moldenke.

Additional citations: BRAZIL: Goyaz: Glaziou 21,917 (Mi--photo of isotype).

97. AEGIPHILA LANCEOLATA Moldenke.

The Balanse 2094 cited by Briquet in Ann. Conserv. Jard. Bot. Genev. 7--8: 318 (1904) as A. cuspidata, is actually A. lanceolata.

79. AEGIPHILA LAXICUPULIS Moldenke.

The misspelling of this binomial, "Aegiphila laxicupula", is recorded in Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940). The species has been collected at altitudes of 2600--3500 feet in Guatemala. It is described by Skutch as a small tree, with cream-colored flowers, inhabiting second-growth thickets. It has been confused with A. martinicensis. The Choussy 12 (W) cited by me in Brittonia 1: 383 (1934) as A. martinicensis var. oligoneura, is actually A. laxicupulis, and therefore adds a La Paz, Salvador, record for this species.

Additional citations: GUATEMALA: Quezaltenango: Skutch 1280 (N).

76. AEGIPHILA LAXIFLORA Benth.

Additional citations: BRITISH GUIANA: M. R. Schomburgk 772 (Mi--photo of type).

27. AEGIPHILA LEHMANNII Moldenke.

Sneidern has collected this species in a primeval forest, at an altitude of 800 m., in El Cauca, Colombia, blooming in March. His specimen has the leaf-blades rather more densely strigillose above and more obovate in shape than the previ-

ously cited material.

Additional citations: COLOMBIA: El Cauca: Sneidern 1660 (s).

33. AEGIPHILA LHOTZKIANA Cham.

Additional citations: BRAZIL: Ceará: Freire Allemao s.n. [Herb. Rio de Janeiro 31,757] (N); Minas Geraes: Regnell 1.310xa (Br--photo); Paraná: Dusen 1028a (I--photo, Mi--photo), s.n. [Herb. Rio de Janeiro 31,756] (N).

93. AEGIPHILA LONGIPETIOLATA Moldenke.

Additional citations: PERU: Loreto: Weberbauer 4667 (I--photo of type, Mi--photo of type).

30. AEGIPHILA MACRANTHA Ducke.

Ducke describes the species as scandent, with white odorous flowers, inhabiting ground that is not inundated periodically (terra firma). Sandwith calls it a bush-rope of the green-heart forest, with creamy-white corollas, blooming and fruiting in August. The first fruits to be collected of this species are found on the sheet of Sandwith 1192 in the Kew herbarium. In Moldenke, Prelim. Alph. List Invalid Names 19, in syn (1940), the binomial "Clerodendron capitatum Klotzsch" is recorded as a synonym. The number "22,549" cited as a collection number of Ducke in Brittonia 1: 320 (1934) and Phytologia 1: 234 (1937), is actually an Herb. Rio de Janeiro number and not a collector's number.

129. AEGIPHILA MACROPHYLLA H.B.K.

This binomial was actually first published in 1818, not in "1817" as cited by me in Brittonia 1: 470 (1934).

73. AEGIPHILA MAGNIFICA Moldenke.

Standley in Field Mus. Publ. Bot. 18: 996 (1938) and on labels gives some additional characters for the composite description of this species: a shrub to 10 feet tall, sometimes scandent; branches densely puberulent; leaves short-petiolate; cymes axillary and terminal, forming a thyrsoid-pyramidal terminal panicle, whose branches are puberulent; fruit somewhat tetragonal, orange; inhabiting damp thickets, rare at altitudes of 330--600 m., fruiting in January. The label on one of the Pomona specimens of C. F. Baker 204 indicates that Baker's number 658 is the same collection, or, at least, was recognized by the collector as being the very same species.

Additional citations: GUATEMALA: Suchitepéquez: P. C. Standley 62,196 (N). NICARAGUA: Chinandega: C. F. Baker 204 (Po--2 isotypes).

71. AEGIPHILA MARTINICENSIS Jacq.

H. L. Gerth von Wijk in his "A Dictionary of Plant Names" (1911 & 1916) records the common names "bois de bouc", "bois cabril", "bois de cabril", "bois de fer", and "westindisches Eisenholz". The additional synonym, Aegiphila pyramidata L., is recorded in Moldenke, Prelim. Alph. List Invalid Names 3, in syn. (1940). Pittier records the species in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939). The Pennell 3689 (G, N) cited by me in Brittonia 1: 382 (1934) proves actually to be A. laeta. The Otero 199 and 308 recorded from the Krukoff herbarium in Phytologia 1: 293 (1938) have now been officially transferred to the Britton Herbarium. The binomial, Aegiphila macrophylla H.B.K., cited in Brittonia 1: 377 (1934) as having been published in "1817" actually was not published until 1818.

Standley in Field Mus. Publ. Bot. 18: 996 (1938) gives a few added characters for the composite description of the species: shrub or small tree; leaves short-petiolate; blades thin, mostly 10--20 cm. long, acuminate or narrowly long-acuminate at apex, glabrous or sparsely and inconspicuously puberulent; cymes rather lax, forming a thyrsoid terminal panicle, whose branches are puberulent; corolla-lobes 3--6 mm. long. He records it from the Changuinola Valley in Panama and states that it grows "doubtless elsewhere in the Atlantic tierra caliente". Box in an as yet unpublished Flora of Antigua describes it as an "undershrub in wooded valleys and ravines in the S.W. district. Infrequent and local." He cites Box 833 and 834, not yet seen by me. Holdridge describes it as a sparingly branched shrub 8 feet tall, with orange fruit in February. The specific name is sometimes written with a capital initial letter. It has been collected in anthesis in November.

Additional citations: PORTO RICO: Holdridge 3 (N); Otero 270 (N), 696 (N). TRINIDAD: Sieber, Fl. Trinit. 85 (Lu). LOCALITY OF COLLECTION UNDESIGNATED: Swartz s.n. (Lu).

71a. AEGIPHILA MARTINICENSIS var. OLIGONEURA (Urb.) Moldenke.

The Choussy 12 (W) cited by me in Brittonia 1: 383 (1934) as this variety proves actually to be A. laxioupulis. This, then, removes the only supposed record of A. martinicensis var. oligoneura from Salvador.

38. AEGIPHILA MEDITERRANEA Vell.

Additional citations: BRAZIL: Rio de Janeiro: Ule s.n. [Herb. Rio de Janeiro 31,558] (N).

12. AEGIPHILA MEDULLOSA Moldenke.

Additional citations: BRAZIL: Rio de Janeiro: Saint-Hilaire C.50 (Mi--photo of type).

83. *AEGIPHILA MOLLIS* H.B.K.

Davidson describes the species as an "herb", doubtless an error in observation. The flowers are said to be greenish-yellow and fragrant, soon falling, blooming in April and May, fruiting in January. It has been collected in clumps on open "llanos" and is said to be abundant on limestone soil and on savannas. Haught describes the leaves as "soft", probably meaning that they are soft-pubescent. The species is recorded by Pittier in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939). It is said to be a shrub 1--5 m. tall by most collectors, growing at altitudes of 100--1250 m. The Hartweg 1359* cited below is a different collection from Hartweg 1359. The latter is Petrea rugosa H.B.K.

Additional citations: PANAMA: Chiriquí: Davidson 638 (F). COLOMBIA: Magdalena: Haught 2288 (N); El Valle: García y Barriga 6449a (W); Cundinamarca: Hartweg 1359* (Lu); Meta: Quatrecasas 4339 (Jc--2); El Vichada: Haught 2793 (N). VENEZUELA: Sucre: Funck 643 (Lu). BOLIVIA: Santa Cruz: Steinbach 3168 (N).

13. *AEGIPHILA MONSTROSA* Moldenke.

Standley gives numerous additional characters for the composite description of this species: shrub or tree; branches pale, obtusely 4-angled, exceedingly brittle and easily broken from the plant with little effort; wood pinkish-gray, very light and soft, medium-textured; leaves very large, long-petiolate, the blades usually broadly elliptic, acute or acuminate at apex, narrowed to the base, nearly glabrous; flowers small, pure white, in small clusters in the axils of the leaves and below the leaves at the nodes of the naked branches, rather numerous and handsome, suggesting those of coffee at a short distance; fruit globose, about 8 mm. in diameter. Schipp describes it as a tree to 10 m. tall, with a stem-diameter of 8 inches and sweetly perfumed flowers. Lundell refers to it as a "bush" in Guatemala. It has been collected in pine regions of humid areas in Honduras, in anthesis in May, August, November, and December, and in fruit in February and April. It has been collected at altitudes of from 50 to 4500 feet. It is recorded in Fedde, Bot. Jahresh. 59²: 416 (1939) and by Lundell in Carnegie Inst. Wash. Publ. 478: 47 & 75 (1937).

Additional citations: GUATEMALA: Alta Verapaz: H. V. Johnson 520 (La). HONDURAS: Yoro: Von Hagen & Von Hagen 1020 (N); Atlántida: P. C. Standley 53,176 (I--photo); Cortés: Carleton 422 (Mi--photo of type). BRITISH HONDURAS: Gentle 248 (La); Schipp 1083 (F).

32a. *AEGIPHILA MONTICOLA* Moldenke.

The Schimpff 252 (B--2, Ob, N--fragment) cited as A. bogotensis in Phytologia 1: 188 (1937) is actually A. monticola instead.

Additional citations: ECUADOR: Chimborazo: Rimbach 118 [Mus. Yale School of Forestry 22,820] (M1--isotype).

11. AEGIPHILA MULTIFLORA Ruiz & Pav.

Steinbach states that the entire inflorescence is violet-red, the filaments white, and the anthers gray or cinnamon-colored.

Additional citations: BOLIVIA: Cochabamba: Steinbach 5809 (F, N).

119. AEGIPHILA OBDUCTA Vell.

Additional synonyms are Aegiphila fontex Schwacke ex Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940) and Aegiphila salicifolia Sellow ex Moldenke, Prelim. Alph. List Invalid Names 3, in syn. (1940). Ducke describes the species as a small tree, with white leaves (meaning leaves white beneath?), blooming in June. Riedel 452 was misidentified and originally distributed as a species of Buddleia.

Additional citations: BRAZIL: Minas Geraes: Riedel 452 (W); Rio de Janeiro: Ducke s.n. [Herb. Rio de Janeiro 22,551] (N); Herb. Rio de Janeiro 31,720 (N); Paraná: Jönsson 379a (Lu); Santa Catharina: Schwacke s.n. [Herb. Rio de Janeiro 31,777] (N).

52. AEGIPHILA ODONTOPHYLLA Donn. Sm.

Standley in Field Mus. Publ. Bot. 18: 996--997 (1938) adds a number of characters to the composite description of this species: small tree, to 10 m. tall; trunk to 30 cm. in diameter; bark gray or grayish-brown, roughened; leaves short-petiolate, opposite, the blades elliptic-oblong, more or less granulose-tomentose; cymes all axillary, dense, densely tomentose; corolla creamy-white; fruit pale-yellow when ripe. He states that the type was collected on the southern (not northern) slope of Volcán de Barba and that the species is endemic to the wet forests of the central mountains at altitudes of 2000--2400 m.

69. AEGIPHILA PANAMENSIS Moldenke.

Standley in Field Mus. Publ. Bot. 19: 997 (1938) and various collectors have added the following items to the composite description of this species: slender shrub or small tree to 8 m. tall, or scandent; branches densely puberulent; leaves short-petiolate, the blades thin, blackening in drying, caudate-acuminate at apex, rather densely puberulent on both surfaces; cymes small, dense or lax, forming a terminal thyrsoid panicle, whose branches are densely puberulent; ca-

lyx almost 3 mm. long; corolla pale-yellowish, cream-colored or white, its tube 5--7.5 mm. long, its lobes 4 mm. long; fruit subglobose, 1 cm. long, truncate at apex. The species has been collected at an altitude of 40 m. by Allen and in anthesis in October. It is said by Standley to inhabit the "thickets of the Atlantic tierra caliente....at 1,100 meters or less." The Skutch 2680 and Matuda 2115 cited below may possibly be A. paniculata instead of the present species, since without the fruit the two species are difficult to distinguish. A. panamensis is recorded in Fedde, Bot. Jahresber. 59²: 416 (1939).

Additional citations: MEXICO: Chiapas: Matuda 2115 (M1, N). COSTA RICA: San José: Skutch 2680 (M1). PANAMA: Coclé: Woodson, Allen, & Seibert 1756 (N); Canal Zone: P. H. Allen 2016 (N); Darien: P. H. Allen 906 (N).

74. AEGIPHILA PANICULATA Moldenke.

Standley in Field Mus. Publ. Bot. 18: 997 (1938) adds the following supplementary characters to the composite description of the species: shrub or tree; branches glabrous or puberulent; leaves short-petiolate, the blades thin, brunnescenscent in drying, acuminate or acute at base; inflorescence-branches glabrous or puberulent; fruit truncate at apex. He says that it inhabits the Changuinola Valley "and doubtless elsewhere in the Atlantic tierra caliente". He remarks "The species is close to A. panamensis and perhaps should be united with it." The Skutch 2680 and Matuda 2115 cited above under A. panamensis may possibly represent A. paniculata. The species is recorded by Fedde in Bot. Jahresber. 59²: 416 (1939).

34. AEGIPHILA PARAGUARIENSIS Briq.

The Malme 2473 (S--2, W) cited by me as A. Sellowiana in Brittonia 1: 334 (1934) and in Phytologia 1: 266 (1937) is actually A. paraguariensis.

Additional citations: BRAZIL: Mattogrosso: Malme 2473 (Lu); Paraná: Dusén 10,472 (Lu).

72. AEGIPHILA PENDULA Moldenke.

This species is recorded by Pittier in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939).

35a. AEGIPHILA PERNAMBUCENSIS Moldenke.

The species has been collected in anthesis in November. In Phytologia 1: 258 (1937) four isotypes are cited from the Britton Herbarium. This is an error -- there are only two isotypes there.

Additional citations: BRAZIL: Parahyba: Zenaide 31 [Herb. Inst. Biol. S. Paulo 36,703] (Sp).

75. AEGIPHILA PERPLEXA Moldenke.

The species is described by Sandwith as having dirty yellowish-white flowers, blooming in October.

Additional citations: TOBAGO: Sandwith 1801 (N).

64. AEGIPHILA PERUVIANA Turcz.

Additional citations: PERU: San Martín: Spruce 4275 (Lu--isotype); Ll. Williams 6836 (Mi--photo).

88. AEGIPHILA PUBERULENTA Moldenke.

Additional citations: COLOMBIA: Bolívar: Elias 617 (Mi--photo of type).

91. AEGIPHILA QUINDUENSIS (H.B.K.) Moldenke.

Williams and Delgado add the following characters to the composite description of this species: slender tree, to 11 m. tall; crown spreading or the branches erect or upright; trunk round, slightly bent, to 30 cm. in diameter, unbranched for 4 or 5 m. from the base; inhabiting transition forests, blooming in January. The species is listed by Pittier in his "Suplemento a las Plantas Usuales de Venezuela", page 54 (1939).

Additional citations: VENEZUELA: Carabobo: Karsten s.n. [Puerto Cabello] (Mi--photo); Aragua: Delgado 115 (W); Ll. Williams 10,251 (W).

115. AEGIPHILA RACEMOSA Vell.

The species is described by Haught as a shrub or small tree, 2--4 m. tall, with light-yellow flowers. It has been collected at 250 m. altitude, in anthesis in February and October, and is listed by Martyn in his "Index to the Phanerogamae of the Jenman Herbarium", page 461, mss. (1937).

Additional citations: COLOMBIA: Boyacá: Haught 2612 (N). BRITISH GUIANA: De la Cruz 3627 (Mi--photo). BRAZIL: Pará: Guedes s.n. [Herb. Rio de Janeiro 31,581] (N).

24. AEGIPHILA RIEDELIANA Schau.

Additional citations: BRAZIL: Bahia: Pohl 4392 (I--photo of cotype); Santa Catharina: Ule 1537 (Br--photo, Mi--photo). ILLUSTRATIONS: Pohl, Icon. Plant. Brasil. 333 (V).

14a. AEGIPHILA RIMBACHII Moldenke.

Additional citations: ECUADOR: Los Ríos: Rimbach 234 [Mus. Yale School of Forestry 28,648] (F--isotype).

44a. AEGIPHILA SALTICOLA Moldenke.

Small tree; principal internodes 1.5--5.5 cm. long; blades 3.8--7 cm. wide, very sparsely scattered-pilose or glabrescent above; cymes to 7 cm. long and 5 cm. wide, very

densely subvillous with flavescent hairs throughout; peduncles 2--4 cm. long; pedicels filiform, 1--2 mm. long, densely subvillous-pubescent; calyx elongate-campanulate, thin and translucent, 5.8--6 mm. long, about 3.4 mm. wide at apex, 1 mm. wide toward base, densely villous with appressed or subspreading flavescent hairs, its rim 4-toothed, the teeth triangular-ovate, about 1.5 mm. long and 1.7 mm. wide at base, acute; corolla white, hypocrateriform, its tube narrow-cylindric, about 5 mm. long, glabrous, its limb 4-parted, the lobes elliptic-lingulate, venose, about 3 mm. long and 1.7 mm. wide, subacute at apex, glabrous on both surfaces; stamens 4, inserted about 1.2 mm. below the mouth of the corolla-tube, long-exserted; filaments filiform, 8.8--9 mm. long, flattened, glabrous; anthers oblong, about 1.2 mm. long and 0.5 mm. wide, dorsifixed near the base; pistil included or short-exserted; style capillary, about 5.1 mm. long, glabrous; stigma bifid, its branches about 1 mm. long.

Additional citations: BRAZIL: Amazonas: Ducke s.n. [Herb. Rio de Janeiro 25,593] (N).

39. AEGIPHILA SELLOWIANA Cham.

The Malme 2473 (S--2, W) cited by me in *Brittonia* 1: 334 (1934) and in *Phytologia* 1: 266 (1937) is actually *A. paraguariensis*. The Mexia 4500 cited in *Phytologia* 1: 294 (1938) as from the Krukoff Herbarium has since been transferred to the Britton Herbarium. The trinomial, *Aegiphila tomentosa* var. *silvestris* Regnell, cited as a synonym of *A. verticillata* in *Brittonia* 1: 329 (1934), is actually synonymous with *A. Sellowiana* [see Moldenke, Prelim. Alph. List Invalid Names 4. 1940]. Another new synonym is *Aegiphila integerrima* (Jacq.) Jacks. ex Moldenke, Prelim. Alph. List Invalid Names 2, in syn. (1940). The two Herb. Rio de Janeiro specimens cited below show beautifully the remarkable difference in the size of the male- and the female-predominant flowers of this species -- no. 31,585 is the female type and has very small flowers, while no. 31,521 is the male type and has very large flowers.

Additional citations: BRAZIL: Minas Geraes: Regnell I.184 [1845] (Lu); Rio de Janeiro: Freire s.n. [Herb. Rio de Janeiro 31,521] (N); São Paulo: R. D. Gonçalves s.n. [Herb. Inst. Biol. S. Paulo 39,285] (Sp); Herb. Rio de Janeiro 31,585 (N); Paraná: Dusen 15,853 (Lu); Rio Grande do Sul: Malme 799 (Lu).

16. AEGIPHILA SESSILIFLORA Moldenke.

Additional citations: COLOMBIA: Antioquia: Archer 392 (Mi --photo of type).

104. AEGIPHILA SETIFORMIS Rusby.

Additional citations: BOLIVIA: La Paz: M. Bang 878a, in part (I--photo of type), 1732 (Mi--photo).

27b. AEGIPHILA SKUTCHII Moldenke, Geogr. Distrib. 13 & 15, nom. nud. (1939), sp. nov.

Arbor; foliis oppositis; laminis anguste ellipticis acum-
inatis integris, ad basim acutis vel subacuminatis, supra
minutissime puberulis, subtus subglabratissimis glandu-
losis; inflorescentiis axillaribus; cymis pedunculatis;
calyce campanulato truncato; corollae lobis 4 obovatis.

Tree, to 16 m. tall; trunk to 47 cm. in diameter;
branchlets rather slender, obtusely tetragonal, gray, minu-
tely but not densely appressed-puberulent, glabrescent in
age; principal internodes 1--2.7 cm. long; leaves decussate-
opposite, numerous; petioles slender, 2--3 cm. long, dense-
ly and minutely appressed-puberulent, canaliculate above;
leaf-blades thin-chartaceous, rather uniformly dark-green on
both surfaces, narrowly elliptic, 8--16 cm. long, 1.5--4.8
cm. wide, acuminate at apex, entire, acute or subacuminate
at base, very minutely and sparsely puberulent above, more
densely so along the midrib and secondaries, subglabrate be-
neath but very densely glandulose with small black puncti-
form and discoid glands; midrib slender, subprominent and
often lighter-colored above, prominent and often lighter-
colored beneath; secondaries slender, 7--9 per side, rather
irregular and with numerous tertiaries intervening between
them, arcuate-ascending, flat or subprominulous above, prom-
inulous beneath, often lighter in color than the lamina on
both surfaces; veinlet reticulation rather sparse and ob-
scure on both surfaces; inflorescence axillary, abundant to-
ward the apex of the branchlets; cymes 4--8 cm. long, 2.5--4
cm. wide, brachiate, many-flowered; peduncles rather slender,
2--4.5 cm. long, divaricate-ascending, densely appressed-
puberulent; pedicels very slender, 1--1.5 mm. long, minu-
tely puberulent; bractlets and prophylla linear, 1--2.5 mm.
long, cinereous-puberulent; calyx campanulate, about 3 mm.
long and wide, very sparsely and minutely puberulent, its
rim truncate and entire or slightly repand; corolla hypo-
crateriform, its tube cylindric, about 5 mm. long, slightly
ampliate above, its limb 4-parted, the lobes obovate-lingu-
late, about 5 mm. long, 3--4 mm. wide, rounded at apex, glab-
rous on both surfaces; stamens 4, inserted about 1.7 mm. be-
low the mouth of the corolla-tube, long-exserted; filaments
filiform, about 10 mm. long, glabrous; anthers oblong, about
1.7 mm. long and 0.7 mm. wide; pistil included; style capil-
lary, about 3.7 mm. long, glabrous; stigma bifid, its bran-
ches about 2 mm. long; immature fruiting-calyx accrescent,
very minutely puberulent or glabrescent, its rim irregularly
split.

The type of this very distinctive species was collected by Alexander Frank Skutch (no. 1551) -- in whose honor it is named -- at Finca Moca, altitude 4700 feet, Suchitepéquez, Guatemala, on October 29, 1934, and is deposited in the Britton Herbarium at the New York Botanical Garden. The collector notes that the type tree was 50 feet tall, with a trunk-diameter of 20 inches at breast height. Immature fruit has been collected in August.

Citations: MEXICO: Chiapas: Matuda 1653 (Mi--2, N--2, N--fragment). GUATEMALA: Suchitepéquez: Skutch 1551 (N--type).

94. AEGIPHILA SMITHII Moldenke.

Additional citations: PERU: Loreto: Klug 1460 (I--photo, Mi--photo).

92. AEGIPHILA SPRUCEANA Moldenke.

Additional citations: BRAZIL: Amazonas: Spruce 2296 (Lu--isotype, N--isotype).

26. AEGIPHILA STANDLEYI Moldenke.

Standley in Field Mus. Publ. Bot. 18: 997 (1938) gives the following additional characters for the composite description of this species: branches glabrate; leaves opposite, short-petiolate, the blades attenuate to the base; cymes all axillarys, equaling or shorter than the petioles, short-pedunculate; calyx 3.5--4 mm. long.

84. AEGIPHILA SURFACEANA Moldenke.

Kuhlmann describes this species as subscandent, with ochraceous-green flowers, inhabiting the secondary forest, blooming in April. It is recorded by Fedde in Bot. Jahresber. 59²: 416 (1939).

Additional citations: BRAZIL: Pará: Dahlgren & Sella 173 (Mi--photo); Herb. Amaz. Mus. Para. 10,751 [Herb. Rio de Janeiro 35,660] (N); J. G. Kuhlmann s.n. [Herb. Rio de Janeiro 22,548] (N).

55. AEGIPHILA SWARTZIANA Urb.

Additional citations: JAMAICA: Swartz s.n. [Jamaica] (I--photo of type).

1. AEGIPHILA TERNIFOLIA (H.B.K.) Moldenke.

Additional citations: COLOMBIA: Cundinamarca: Goudot s.n. [Near Bogotá] (Mi--photo).

56. AEGIPHILA TRIFIDA Sw.

Harris describes the species as a straggling shrub 8 feet tall.

Additional citations: JAMAICA: W. Harris 6273 (Mi--photo)



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

October, 1940

No. 12

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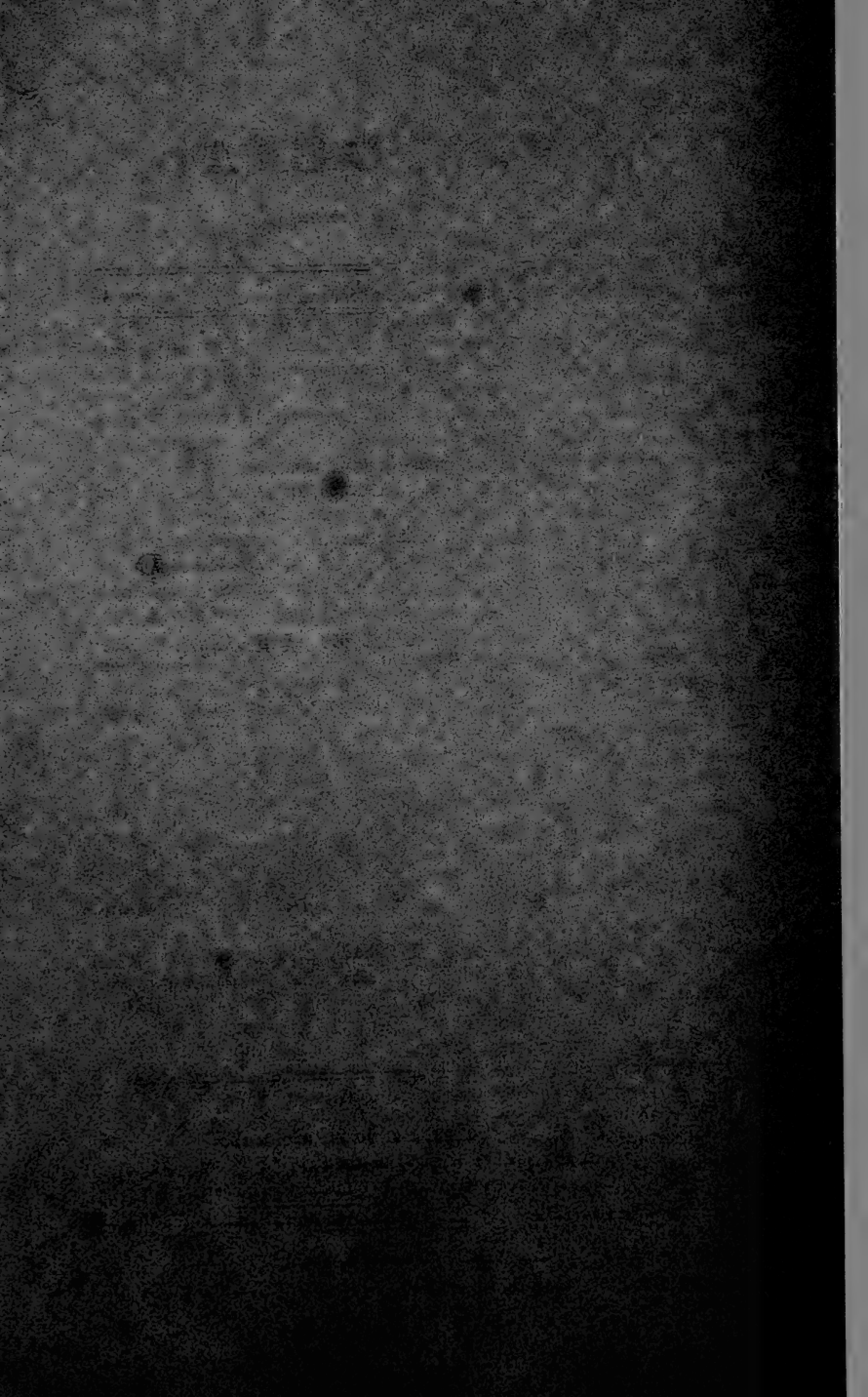
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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance

Vol. I, No. 11, was issued September 6, 1940



NEW SPECIES OF CROTON FROM THE YUCATAN PENINSULA (a)

C. L. Lundell

CROTON AGUILARI Lundell, sp. nov.

Frutex, stellato-tomentosa. Petioli usque ad 7.5 cm. longi, apice glandulosi. Lamina chartacea, denticulata, late ovata, apice caudato-acuminata, basi cordata, supra subglabra, subtus albido-tomentosa. Inflorescentiae bisexuales. Flores ♀ sessiles; calyce usque ad 3.5 mm. longo, lobis triangulari-acuminatis; stylis ca. 6 mm. longis. Flores ♂ pedicellati, glomerulati; calyce ca. 3.5 mm. longo; staminibus 36 vel 37. Capsula parce stellato-tomentosa, ca. 7 mm. longa.

A shrub with whitish to tawny tomentum of stellate hairs. Branchlets thick, with large pith, sulcate, covered at first with tawny tomentum, at length glabrescent. Petioles stout, tawny tomentose, up to 7.5 cm. long, with 4 conspicuous glands at apex on under surface. Leaf-blades thin-chartaceous, irregularly denticulate or subserrulate, the teeth gland-tipped, broadly ovate, up to 25 cm. long, 15.5 cm. wide, apex caudate-acuminate, base cordate, covered beneath with whitish tomentum of stellate hairs, sparsely stellate hairy above except along the veins, costa and primary veins elevated beneath, slightly impressed above, base 3- or 5-nerved. Racemes terminal, bisexual, up to 38 cm. long, the rachis and flowers tawny tomentose, the staminate flowers glomerulate. Pistillate flowers sessile; calyx up to 3.5 mm. long, deeply 5-lobed, the lobes strongly unequal, triangular-acuminate, subsetaceous, 1 to 3 mm. long; petals reduced to laciniae; ovary tawny tomentose with stellate hairs; styles sparsely hairy, about 6 mm. long, each once branched. Staminate flowers with slender pedicels up to 6.5 mm. long; calyx about 3.5 mm. long, deeply 5-lobed, the lobes ovate; petals 5, oblong-elliptic, about 3.5 mm. long, minutely papillate, long-pilose within at base; stamens 36 or 37, filaments glabrous; receptacle pilose. Capsules sessile, about 7 mm. long, sparsely tawny tomentose.

Type in the University of Michigan Herbarium, Mercedes Aguilar H. 463, collected in secondary forest (acahual), near La Libertad, Department of Petén, Guatemala, January 30, 1935; vernacular name "caret".

Mr. Aguilar reports that it has a bitter sap which flows copiously. The species is allied to C. asteroides Lundell, and belongs to the complex of C. xalapensis H.B.K.

CROTON AMELIAE Lundell, sp. nov.

Frutex, ramulis albido-tomentellis. Petioli usque ad 3

cm. longi. Lamina membranacea, integra, ovata, apice acuminata, basi anguste cordata, subtus albido-tomentosa. Inflorescentiae bisexuales. Flores ♀ pedicellati; calyce usque ad 11 mm. longo, lobis 5, oblong-lanceolatis, stipitato-glandulosis. Flores ♂ pedicellati; calyce 2.6 mm. longo; petalis 5, oblongis; staminibus 16.

Arborescent shrub, about 2 m. high, with whitish tomentum of stellate hairs. Branchlets erect, slender, white tomentellous and sparsely hirsute with stellate hairs. Stipules aristate, up to 1.3 cm. long. Petioles slender, white tomentellous, up to 3 cm. long. Leaf-blades membranaceous, entire, ovate, 3 to 6.8 cm. long, 1.5 to 3.7 cm. wide, apex acuminate, base cordate with a closed sinus, stellate puberulent and green above, persistently white tomentellous beneath, costa elevated beneath, slightly impressed above, 5- or 7-veined at base. Racemes terminal, bisexual, up to 7.5 cm. long, white tomentellous and sparsely hirsute. Pistillate flowers with stellate-hirsute pedicels up to 7 mm. long; calyx up to 11 mm. long, deeply 5-lobed, the lobes oblong-lanceolate, stellate-hirsute, the lower two-thirds bearing stalked prominent glands along the margins outside, the lobes tomentose within; ovary stellate hairy; styles united at base, digitately lobed. Staminate flowers with pedicels up to 5 mm. long; calyx 2.6 mm. long, the lobes lanceolate; petals 5, oblong, about 2.3 mm. long; stamens 16, filaments pilose below middle; receptacle pilose.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7447, collected in advanced deciduous forest along Kaua road, east of Chichen Itza, Yucatan, Mexico, June 8, 1938.

CROTON ASTEROIDES Lundell, sp. nov.

Arbor, stellato-tomentosa. Petioli 1--5 cm. longi, apice glandulosi. Lamina chartacea, minute denticulata, ovata vel lanceolato-ovata, apice caudato-acuminata, basi subcordata vel rotundata, supra subglabra, subtus albido-tomentosa. Inflorescentiae bisexuales. Flores ♀ sessiles; calyce ca. 2.8 mm. longo, lobis 5, triangulari-acuminatis, subsetaceis; stylis ca. 5 mm. longis. Flores ♂ pedicellati; calyce ca. 3.2 mm. longo; staminibus 30 vel 31. Capsula stellato-tomentosa, ca. 6.5 mm. longa.

A tree, 12.5 cm. in diam., with whitish tomentum of stellate hairs. Branchlets rather slender, somewhat flattened and angled. Petioles slender, 1 to 5 cm. long, with 2 or 4 conspicuous sessile or subsessile yellow glands at apex on under surface. Leaf-blades chartaceous, minutely denticulate with glandular teeth, ovate or lanceolate-ovate, 5.5 to 13 cm. long, 2.8 to 6.5 cm. wide, apex caudate-acuminate, base shallowly cordate or rounded, white tomentose beneath with

soft stellate hairs, green and very sparsely stellate hairy above except along the veins, costa and primary veins elevated beneath, fine and with age slightly impressed on upper surface, base 3- or 5-nerved. Racemes terminal, bisexual, up to 13.5 cm. long, the rachis and flowers white tomentose with soft stellate hairs. Pistillate flowers sessile; calyx about 2.8 mm. long, star-like, deeply 5-lobed, the lobes narrowly triangular-acuminate, subsetaceous; ovary white tomentellous with stellate hairs; styles sparsely hairy, about 5 mm. long, each once branched. Staminate flowers with slender pedicels up to 7 mm. long; calyx about 3.2 mm. long, deeply 5-lobed, the lobes ovate; petals 5, oblong-elliptic or obovate-oblong, 3.5 mm. long, minutely papillate, long-pilose within at base; stamens 30 or 31, filaments glabrous; receptacle pilose. Capsules sessile, about 6.5 mm. long, white tomentose with short stellate hairs.

Type in the University of Michigan Herbarium, Percy H. Gentile 2218, collected on hillsides at Vaca, El Cayo District, British Honduras, February 22, 1938.

The calyx of the pistillate flowers is asteroid in appearance, whence the specific name.

CROTON FLAVOGLANDULOSUS Lundell, sp. nov.

Frutex. Petioli 3--7 cm. longi. Lamina chartacea, integra, anguste lanceolata vel lineari-lanceolata, apice attenuata, acuta vel acuminata, basi obtusa, supra stellato-hirtella, subtus albido-tomentosa, biglandulosa. Inflorescentiae bisexuales. Flores ♀ pedicellati; calyce 3--3.5 mm. longo, lobis 5, oblongis. Flores ♂ pedicellati; calyce ca. 3 mm. longo, lobis 5; staminibus 10 vel 11. Capsula albido-tomentosa, ca. 5 mm. longa.

A shrub. Branchlets slender, wiry, tawny, densely stellate-hirtellous. Petioles rather stout, canaliculate, 3 to 7 mm. long. Leaf-blades chartaceous, entire, narrowly lanceolate or linear-lanceolate, 2.3 to 5 cm. long, 0.6 to 1.4 cm. wide, apex attenuate, acute or acuminate, base obtuse, upper surface covered with small stellate hairs, beneath with whitish tomentum of appressed stellate hairs, pinnately veined, the veins evident beneath, scarcely discernible above, costa slightly impressed above, prominent on lower surface, with a pair of stipitate yellow glands at base beneath. Racemes terminal, bisexual, up to 5.5 cm. long, tomentellous with whitish stellate hairs. Pistillate flowers with stout pedicels about 1.8 mm. long; calyx 3 to 3.5 mm. long, deeply 5-lobed, the lobes oblong, up to 3 mm. long, 1.3 mm. wide, entire, obtuse, accrescent; petal vestiges threadlike; ovary stellate-tomentellous; styles hairy, each once branched. Staminate flowers with slender pedicels up to 3 mm. long; calyx about 3 mm. long, deeply 5-lobed, the

lobes narrowly ovate, up to 2.5 mm. long; petals 5, oblong-elliptic, about 3 mm. long, 1.3 mm. wide, long-pilose at base; stamens 10 or 11, filaments glabrous, up to 3 mm. long, anthers 1 mm. long; receptacle pilose, Capsule white tomentellous with stellate hairs, about 5 mm. long.

Type in the University of Michigan Herbarium, Eizi Matuda 3042, collected in savanna at Achotal near Balancan, Tabasco, Mexico, May 9-14, 1939.

CROTON ICCHE Lundell, sp. nov.

Arbor parva, lepidota. Petioli 4--10 mm. longi. Lamina chartacea, subintegra, eglandulosa, lanceolata vel oblongo-lanceolata, apice obtuse acuminata, basi obtusa vel rotundata. Inflorescentiae usque ad 4.5 cm. longae. Flores ♀ pedicellati; calyce ca. 2.8 mm. longo, lobis 5, ovatis. Flores ♂ pedicellati; staminibus 9--11. Capsula ca. 7 mm. longa, lepidota, haud tuberculata.

A small tree or arborescent shrub up to 5 m. high and 5 cm. in diam., lepidote throughout; branchlets slender, ferruginous-lepidote, angled and somewhat compressed, terete with age. Petioles slender, canaliculate, 4 to 10 mm. long. Leaf-blades thinly chartaceous, subentire, eglandular, lanceolate or oblong-lanceolate, 3.5 to 9.5 cm. long, 1.2 to 3.8 cm. wide, apex obtusely acuminate, base obtuse or rounded, often subcuneate, green and sparsely lepidote above, at first densely lepidote beneath, glabrescent with age, costa plane or slightly raised on upper surface, prominent beneath, pinnately veined, the veins fine and inconspicuous. Racemes axillary and terminal, staminate or bisexual, up to 4.5 cm. long, ferruginous-lepidote. Pistillate flowers with short stout pedicels about 2.5 mm. long; calyx about 2.8 mm. long, deeply 5-lobed, the lobes ovate, tomentose within; petals 5, oblanceolate or spatulate, clawed, about 3 mm. long, lepidote outside, densely short villous-tomentose within; ovary lepidote; styles punctate, branched 2 or 3 times. Staminate flowers with slender pedicels about 2 mm. long; calyx about 2.8 mm. long, deeply 5-lobed; petals 5, elliptic, about 3 mm. long, clawed; stamens 10 or 11, filaments sparsely pilose; receptacle pilose. Capsules ferruginous-lepidote, smooth, not tuberculate, about 7 mm. long; fruiting pedicels and calyx not accrescent.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7871, collected in advanced forest on Merida road between Pisté and Yokdzonoot, Yucatan, Mexico, July 11, 1938. In second growth near Pisté, Lundell and Lundell 7547, June 14, 1938. In advanced forest east of Coba, Quintana Roo, Mexico, Lundell and Lundell 7719, June 30, 1938; vernacular name "icche".

In Maya, ic is chili and che is wood or tree. The leaves

and wood of the tree have an odor suggestive of the chili pepper, whence the Maya name "icche". C. Icche is a member of the complex which includes C. glabellus L., C. perobtus Lundell, and C. pseudoglabellus Lundell.

CROTON ITZAEUS Lundell, sp. nov.

Frutex, stellato-tomentosa. Petioli usque ad 1 cm. longi. Lamina chartacea, serrato-dentata, lanceolato-oblonga, apice acuta vel obtusa, basi obtusa vel rotundata. Inflorescentiae bisexuales, usque ad 3.5 cm. longae. Flores ♀ pedicellati; calyce usque ad 6 mm. longo. Flores ♂ pedicellati; staminibus 11--13.

Shrub, 1 m. high, intricately branched, stellate-tomentose. Branchlets slender, at first tomentose, the stellate hairs with central ray elongated sharply. Petioles up to 1 cm. long. Leaf-blades chartaceous, lanceolate-oblong or ovate-lanceolate, 1.5 to 5 cm. long, 0.8 to 2.2 cm. wide, apex usually acute, sometimes bluntly obtuse, base obtuse or rounded, yellow-green above and densely covered with soft stalked stellate hairs, with whitish tomentum of stellate hairs beneath, margin irregularly serrate-dentate, usually with small short-stalked glands between the serratures and at base of blade, pinnately veined, the costa and veins conspicuous beneath. Racemes terminal, bisexual, up to 3.5 cm. long, with whitish tomentum of stellate hairs. Pistillate flowers with stout pedicels about 1 mm. long; calyx up to 6 mm. long, 5-lobed, the lobes unequal, oblong or obovate-elliptic; petal vestiges minute, resembling staminodes; ovary stellate-tomentose; styles 3, each once branched. Staminate flowers with pedicels up to 3 mm. long; calyx 2.8 mm. long, lobes ovate-oblong; petals 5, oblanceolate, up to 3.5 mm. long, ciliate, the hairs below middle elongated; stamens 11 to 13, filaments glabrous; receptacle pilose.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 8046, collected in open cactus thicket bordering south edge of cienaga near Progreso, Yucatan, Mexico, July 22, 1938.

CROTON PEROBTUSUS Lundell, sp. nov.

Arbor, lepidota. Petioli 0.5--1.8 cm. longi. Lamina subcoriacea, integra, oblonga vel lanceolato-oblonga, utrinque obtusa. Inflorescentiae bisexuales, usque ad 5 cm. longae. Flores ♀ subsessiles; calyce fere ad basim partito, lobis 5, ovatis, 2.2--2.5 mm. longis. Flores ♂ pedicellati; staminibus 11 vel 12. Pedicelli fructiferi 2--3 mm. longi. Capsula haud tuberculata, lepidota, ca. 6.5 mm. longa.

A tree up to 18 m. high and 40 cm. in diam., silvery lepidote throughout. Branchlets stout, angled. Petioles stout, 0.5 to 1.8 cm. long, shallowly canaliculate, eglandular at

apex. Leaf-blades subcoriaceous, entire, oblong or lanceolate-oblong, 7 to 14.5 cm. long, 3.3 to 5.3 cm. wide, apex and base usually bluntly obtuse, apex sometimes obtusely subacuminate, sparingly lepidote above at first, glabrous with age, densely lepidote beneath, costa slightly elevated above, prominent beneath, pinnately veined, the primary veins prominulous on both surfaces. Racemes subspicate, bisexual, axillary, up to 5 cm. long. Pistillate flowers subsessile, the pedicels less than 1 mm. long; calyx 5-lobed nearly to the base, the lobes ovate, 2.2 to 2.5 mm. long, entire, with finely lanate margins; petals 5, obovate or elliptic, up to 3 mm. long, short-clawed, margins long-ciliate-lanate; ovary lepidote; styles 3. Staminate flowers short-pedicellate, calyx and corolla as in pistillate flowers; stamens 11 or 12, filaments 3 mm. long, anthers 1 mm. long; receptacle pilose. Fruiting pedicels stout, usually 2 to 3 mm. long, rarely up to 4 mm. long. Capsules smooth or nearly so, lepidote, about 6.5 mm. long.

Type in the University of Michigan Herbarium, Eizi Matuda 3327 (flowers), collected in advanced forest at La Palma, near Balancan, Tabasco, Mexico, June 1--6, 1939. At Reforma, near Balancan, Matuda 3160 (fruits), May 22--26, 1939.

CROTON PETENENSIS Lundell, sp. nov.

Arbor, stellato-lepidota. Petioli 1--3.5 cm. longi, apice biglandulosi. Lamina membranacea, crenato-dentata, elliptico-oblonga vel obovato-elliptica, apice rotundata, emarginata, vel obtuse subacuminata, basi obtusiuscula, utrinque parce stellato-lepidota. Infructescentiae usque ad 11.5 cm. longae. Capsula parce stellato-lepidota, ca. 9 mm. longa.

A tree 8 m. high, stellate-lepidote, the scales silvery. Branchlets rather slender, at first densely stellate-lepidote. Petioles very slender, canaliculate, 1 to 3.5 cm. long, bearing at apex on upper side two prominent subsessile glands. Leaf-blades thin-membranaceous, crenate-dentate, the teeth gland-tipped, elliptic-oblong or obovate-elliptic, 3 to 11 cm. long, 1.4 to 4.7 cm. wide, apex rounded, emarginate or obtusely subacuminate, base obtusish, at first sparsely stellate-lepidote on both surfaces, glabrescent above with age, base 3-nerved, costa elevated beneath, veins prominulous. Pistillate flowers unknown. Staminate flowers in bud only, pedicellate, stellate-lepidote; calyx-lobes 5, petals 5, the petals pilose; stamens 16, filaments glabrous; receptacle pilose. Infructescence terminal, up to 11.5 cm. long; fruiting pedicels stout, recurved, 3 to 4 mm. long. Capsules rather sparsely stellate-lepidote, about 9 mm. long.

Type in the University of Michigan Herbarium, C. L. Lundell 4128, collected in secondary forest along Aguada Tigre--Yaxha road, Department of Petén, Guatemala, June 17, 1933.

CROTON PSEUDOGLABELLUS Lundell, sp. nov.

Arbor, lepidota. Petioli 2--4.5 mm. longi. Lamina chartacea, integra, eglandulosa, ovata, apice obtusa vel acutiuscula, basi rotundata, lepidota. Inflorescentiae bisexuales. Flores ♀ subsessiles; calyce ca. 2.8 mm. longo, lobis 5, ovatis vel lanceolatis. Flores ♂ subsessiles; staminibus 9--11.

A tree 6 m. high, lepidote; branchlets erect, rather stout, angled. Petioles 2 to 4.5 mm. long. Leaf-blades chartaceous, entire, ovate, 2.2 to 5.5 cm. long, 1.2 to 3.1 cm. wide, apex obtuse or acutish, base rounded, at first densely lepidote on both surfaces, glabrescent above with age, costa prominent beneath, less conspicuous above, pinnately veined, the veins obscure. Racemes axillary, bisexual, crowded, up to 2.3 cm. long, ferruginous-lepidote. Pistillate flowers with pedicels about 1.6 mm. long; calyx about 2.8 mm. long, deeply 5-lobed, the lobes ovate or lanceolate; petals 5, spatulate, about 2.5 mm. long, short-clawed, villous-ciliate; ovary ferruginous-lepidote; styles 3, branched 3 times. Staminate flowers with pedicels about 1 mm. long; stamens 9 to 11, filaments sparsely pilose below middle.

Type in the University of Michigan Herbarium, G. F. Gaumer 1407, collected at Lake Chichankanab, Quintana Roo, Mexico.

The small ovate leaves and compact inflorescences distinguish this species from C. glabellus L. and its allies.

CROTON SUTUP Lundell, sp. nov.

Frutex, stellato-tomentosa. Petioli 0.5--1.8 cm. longi. Lamina chartacea, integra, eglandulosa, oblanceolata vel oblongo-elliptica, apice acuta vel acuminata, basi obtusa. Inflorescentiae bisexuales. Flores ♀ pedicellati; calyce 5.3 mm. longo, lobis lineari-oblongis. Flores ♂ pedicellati; staminibus 11.

A shrub, about 2 m. high, with soft whitish or brownish tomentum of stellate hairs. Branchlets slender, brownish tomentose with age. Stipules aristate. Petioles slender, 0.5 to 1.8 cm. long. Leaf-blades chartaceous, entire, oblanceolate or oblong-elliptic, 4 to 8 cm. long, 1.2 to 3.8 cm. wide, apex acute or acuminate, base obtuse, green and sparsely hairy above, whitish tomentose beneath, costa and veins impressed above, prominent beneath, pinnately veined with base 3-nerved. Racemes terminal, bisexual, up to 8.5 cm. long, whitish tomentose. Pistillate flowers with stout pedicels about 2 mm. long, sharply accrescent; calyx 5.3 mm. long, accrescent, 5-lobed, the lobes linear-oblong; styles 3, digitately lobed. Staminate flowers with slender pedicels about 4 mm. long; calyx 2.5 mm. long, lobes ovate-oblong;

petals 5, oblanceolate, about 2.8 mm. long, ciliate, the basal hairs elongated; stamens 11, filaments sparsely pilose below middle. Immature capsules stellate-tomentose.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7363, collected in low second growth near Pisté, Yucatan, Mexico, June 4, 1938; vernacular name "sutup".

CROTON TABASCENSIS Lundell, sp. nov.

Arbor, stellato-hirsuta vel tomentosa. Petioli usque ad 1.8 cm. longi. Lamina chartacea, ovata vel oblongo-ovata, apice acuta vel subacuminata, basi subcordata vel rotundata, glabrata, margine minute denticulata. Inflorescentiae bisexuals. Flores ♀ pedicellati; calyce ca. 6.5 mm. longo, lobis 5, ovatis. Flores ♂ pedicellati; calyce ca. 4 mm. longo, lobis 5; staminibus 15 vel 16. Capsula stellato-hirsuta.

A tree 7 m. high and 25 cm. in diam., stellate hairy throughout. Branches stout; branchlets slender, densely short-hirtellous with appressed stellate hairs, the central ray elongated sharply. Petioles slender, up to 1.8 cm. long, shallowly canaliculate. Leaf-blades chartaceous, ovate or oblong-ovate, 2.5 to 7 cm. long, 1.4 to 3.4 cm. wide, apex acute or short-acuminate, base shallowly cordate or rounded, minutely denticulate, eglandular, with scattered appressed stellate hairs on both surfaces, glabrate with age, palmately veined, basal veins 5 or 7, costa and veins prominulous and whitish beneath, inconspicuous and slightly impressed above. Cymes terminal, bisexual, up to 9 cm. long, rachis and flowers stellate-tomentose. Pistillate flowers with pedicels 3 to 6 mm. long; calyx about 6.5 mm. long, deeply 5-lobed, the lobes ovate, about 5 mm. long, 4 mm. wide, irregularly toothed below middle, acutish; ovary stellate-tomentose; styles stellate hairy, twice branched. Staminate flowers with pedicels up to 3 mm. long; calyx 4 mm. long, the lobes ovate, entire, about 3 mm. long, 2 mm. wide; petals 5, narrowly oblong-elliptic, about 3.5 mm. long, 2 mm. wide, pilose; stamens 15 or 16, filaments pilose below middle, 3 to 4 mm. long; receptacle pilose. Capsule densely stellate-hirsute, about 7 mm. long (immature).

Type in the University of Michigan Herbarium, Eizi Matuda 3145, collected at Reforma, near Balancan, Tabasco, Mexico, May 22--26, 1939.

Probably related to C. Soliman Schlecht. & Cham.

CROTON YUCATANENSIS Lundell, sp. nov.

Frutex, stellato-lepidota. Petioli usque ad 3.5 cm. longi. Lamina membranacea, subintegra, lanceolata vel ovata, eglandulosa, apice acuminata, acuta vel obtusa, basi subcordata vel rotundata, subtus albido-lepidota. Inflorescentiae

bisexuales, ad 21 cm. longae. Flores ♀ pedicellati; calyce 4 mm. longo, lobis late ovatis. Flores ♂ pedicellati; staminibus 13--18. Capsula ca. 5 mm. longa.

Arborescent shrub, up to 2 m. high, with whitish scale-like stellate hairs. Branchlets slender. Stipules reniform, at first small and long-aristulate-cuspidate, becoming foliaceous. Petioles slender, up to 3.5 cm. long. Leaf-blades membranaceous, obscurely and minutely denticulate, appearing entire, lanceolate or ovate, 2 to 10 cm. long, 1.3 to 5 cm. wide, apex acuminate, acute or obtuse, base subcordate or rounded, green and very sparsely lepidote above, densely white lepidote beneath, base 5- or 7-nerved, costa and veins conspicuous beneath, slightly impressed above. Racemes very slender, terminal, bisexual, up to 21 cm. long. Pistillate flowers with pedicels about 2.5 mm. long, accrescent; calyx 4 mm. long, thin, sharply accrescent, 5-lobed to middle, the lobes broadly ovate, acutish, becoming rounded, ruffled with age; petal vestiges pilose; ovary white stellate-lepidote; styles branched 3 or 4 times. Staminate flowers with slender pedicels about 5 mm. long; calyx 3 mm. long, lobes ovate; petals linear, variable in number; perfect stamens 13 to 18, filaments pilose. Capsules about 5 mm. long.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7400, collected in second growth at kilometer 77, Merida-Chichen Itza road, Yucatan, Mexico, June 3, 1938. In low second growth bordering Sacred Cenote at Chichen Itza, Lundell and Lundell 7524, June 12, 1938.

Related to C. Watsonii Standl.

(a) Papers from the University of Michigan Herbarium.

NOVELTIES IN THE AVICENNIACEAE AND VERBENACEAE

Harold N. Moldenke

(1)

AVICENNIA BALANOPHORA Stapf & Moldenke ex Moldenke, Geogr.

Distrib. 34, nom. nud. (1939), sp. nov.

Arbor; ramulis gracillimis subteretibus dense griseo-farinaceis glabrescentibus; nodis annulatis articulatis; petiolis dense griseo- vel flavido-farinaceis; laminis firme chartaceis vel subcoriaceis lanceolatis vel anguste ellipticis acutis vel longe acuminatis vel caudatis integris, ad basin attenuatis vel longe acuminatis, supra obscure pulver-

ulentis vel glabris, subtus densissime incano- vel flavido-farinaceis; inflorescentiis axillaribus terminalibusque, capitatis solitariis vel geminatis; fructibus oblongis ad apicem et basin rotundatis, ad apicem apiculatis.

Small tree; branchlets and twigs very slender, subterete, densely grayish-farinaceous, becoming glabrous in age, obscurely or not at all lenticellate; nodes swollen, annulate, articulate; principal internodes 2.8--6.5 cm. long; leaves decussate-opposite; petioles rather slender, 0.8--2 cm. long, densely farinaceous with gray or yellowish hairs, flattened above, wrinkled longitudinally beneath in drying, slightly ampliate at base; blades firmly chartaceous or subcoriaceous, dark-green and rather shiny above, incanous or flavidous beneath, lanceolate or narrowly elliptic, 2.5--9.3 cm. long, 6--24 mm. wide, varying from acute (on young leaves) to long-acuminate or caudate (on mature leaves) at apex, entire, attenuate or long-acuminate into the petiole at base, very obscurely fine-pulverulent or glabrate above, very densely incanous- or yellowish-farinaceous beneath; midrib slender, slightly prominulous above and usually canaliculate to the apex or to $1/2$ or $3/4$ the distance from the base, rounded-prominulous beneath; secondaries very slender, ascending, slightly prominulous on both surfaces, arcuately joined in many loops at the margins, mostly obscure beneath; vein and veinlet reticulation sparse, the larger portions subprominulous on both surfaces, mostly obscure or hidden beneath; inflorescence axillary and terminal, the axillary ones solitary or paired, capitate, 1.4--5 cm. long, 5--19 mm. wide, several-flowered, the terminal one often 3-branched at apex and there conspicuously bracteate; bracts, when present, foliaceous, very narrowly elliptic, short-stipitate or subsessile, 17--25 mm. long, 4--6 mm. wide, densely farinaceous with incanous or yellowish furf on both surfaces, acute at apex, attenuate or acuminate at base; fruiting-calyx practically unchanged, densely short-pubescent, its segments and the similar bractlets and prophylla mostly brown-margined, closely appressed to the base of the fruit; fruit oblong, 6--9 mm. long, 4--4.5 mm. wide, rounded at both ends, very densely puberulent with grayish-flavidous hairs, apiculate at (usually) the exact center above.

The type of this species was collected by Ferdinand von Mueller along the Brisbane River, Queensland, Australia, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. It is known also from Keppels Islands, Queensland.

AVICENNIA ALBA var. LATIFOLIA Moldenke, Geogr. Distrib. 34, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit laminis foliorum maturis late ellipticis usque ad 6.5 cm. latis.

This variety differs from the typical form of the species in its mature leaf-blades being broadly elliptic, to 6.5 cm. wide.

The type was collected by Noerkas (no. 58) on the Van Vuuren Expedition at Cape Wadjo on Celebes Island, and is deposited in the Rijksherbarium at Leiden.

AVICENNIA MARINA var. *ACUTISSIMA* Stapf & Moldenke ex Moldenke, Geogr. Distrib. 32, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit laminis foliorum ad apicem argute acutis vel acuminatis; petiolis brevissimis; tomentis ramulorum pedunculorum albis.

This variety differs from the typical form of the species chiefly in its decidedly sharp-acute or acuminate leaf-apex. The branches, branchlets, twigs, peduncles, bractlets, prophylla, and fruits are also more plainly and regularly white-farinaceous. The petioles are very uniformly extremely short, 1--6 mm. long. The fruit is not beaked.

The type was collected by R. K. Ehde in the creek near Boriwle Station of the B. B. & C. I. R. R., Salsette Konkan, Bombay, India, on April 4, 1904, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The variety is known thus far only from Bombay and Sind.

AVICENNIA MARINA var. *ANOMALA* Moldenke, Geogr. Distrib. 35, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit inflorescentiis attenuatis, floribus geminatis oppositis vel irregulariter dispositis.

This variety differs from the typical form of the species in its attenuate inflorescences with scattered or opposite pairs of flowers.

The type was collected by D. Henne and Carl Wilhelmi on Low Island, Tasmania, and is deposited in the Bernhardt Herbarium at the Botanisches Museum in Berlin.

BURROUGHSIA Moldenke, gen. nov.

Plantae suffrutescentes; caulibus sublignosis multiramosis brevibus; ramis numerosis gracilibus plerumque fasciculatis; foliis simplicibus oppositis vel ternatis sessilibus plerumque lanceolatis; inflorescentiis axillaribus spicatis vel capitatis; bracteolis ovatis vel ovato-lanceolatis distinctis acutis; calyce bipartito persistente; corolla hypocrateriformi, limbo bilabiato 5-partito; staminibus 4 didynamis; antheris ventralibus longe appendiculatis; stigmate obliquo discoideo.

Somewhat woody perennials or shrubby, much branched; stems short, somewhat ligneous, covered with a light-colored cracked cortex; branches numerous, slender, flexuous, ascen-

ding, often fascicled; leaves simple, opposite or ternate, sessile, small, usually lanceolate in outline, pinnatifid or crenate, often plicate and prominently veined beneath; inflorescence axillary, spicate or capitate; peduncles solitary, 2--4 times as long as the subtending leaves; heads hemispheric or oblong and few-flowered, or spikes oblong and dense; bractlets ovate or ovate-lanceolate, distinct, acute, ciliate, pubescent; calyx much exceeding the bractlets, 2-parted, persistent, united nearly to the top and truncate or minutely 2-toothed; corolla purplish or white, much exserted, hypocrateriform, its tube cylindric, its limb bilabiate, the upper lip 2-lobed, the lower 3-cleft, all the lobes crenate or crisped, the ventral lobe somewhat larger than the others; stamens 4, didynamous; filaments longer than the anthers, the ventral ones with slender erect appendages springing from the connective and exceeding the anthers in length; anther-cells somewhat separate and oblique; pistil very short; stigma strictly simple, oblique, disk-like; ovules one in each cell.

This remarkable genus of the Verbenaceae combines the 5-parted corollas and appendaged anthers of Verbena and the 2-cleft calyx and entire oblique stigmas of Lippia. It is named in honor of John Burroughs (April 13, 1837--March 29, 1921), distinguished American naturalist, philosopher, and writer. Type species, B. appendiculata.

BURROUGHSIA APPENDICULATA (Robinson & Greenm.) Moldenke, Prelim. Alph. List Invalid Names 30, hyponym (1940), comb. nov.

Lippia appendiculata Robinson & Greenm., Proc. Am. Acad. 29: 390. 1894.

BURROUGHSIA FASTIGIATA (T. S. Brandeg.) Moldenke, Suppl. List Common Names 6, nom. nud. (1940); Prelim. Alph. List Invalid Names 30, hyponym (1940), comb. nov.

Lippia fastigiata T. S. Brandeg., Proc. Calif. Acad., ser. 2, 2: 196. 1889.

CITHAREXYLUM AFFINE var. GLANDULIFERUM Moldenke, Geogr. Distrib. 13, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit laminis foliorum late ovatis, usque ad 12 cm. longis et 6.5 cm. latis, irregulariter arguto-dentatis, subtus puberulentibus et glanduliferis; glandulis paucis discoideis.

This variety differs from the typical form of the species in its broadly ovate leaf-blades, which are to 12 cm. long and 6.5 cm. wide, irregularly sharp-dentate along the margins when mature, puberulent throughout on the lower surface, and glandulose with several brown disk-like glands along the

midrib and at the base beneath. The sharply tetragonal and glabrous branches, branchlets, and twigs are many-striate and abundantly impressed glandular-punctate (!).

The type of this variety was collected by George B. Hinton (no. 7344) in an oak woods at Yperricones, Tamascaltepec, México, Mexico, on February 7, 1935, and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

CITHAREXYLUM GHIESBREGHTII Moldenke, sp. nov.

Frutex; ramulis obtuse tetragonis sparse strigillosis vel glabratis nitidulis; petiolis gracilibus obscure sparsissimeque pulverulento-puberulis vel glabratis; laminis lanceolatis vel ellipticis attenuato-subacuminatis integris, ad basin acutis, utrinque glabratis vel sparse punctatis; inflorescentiis axillaribus confertis racemiformibus erectis vel nutantibus.

Shrub; branchlets slender, buff or brownish, rather shiny, striate in drying, obtusely tetragonal, sparsely strigillose or glabrate, somewhat ampliate at the nodes; nodes annulate, mostly oblique; principal internodes 5--6 cm. long; leaves decussate-opposite; petioles slender, 1.5--2.2 cm. long, obscurely and very sparsely pulverulent-puberulent or glabrate, not noticeably ampliate at base, flattened above, usually somewhat canaliculate-margined toward the apex; blades thin-chartaceous, rather uniformly dark-green on both surfaces, lanceolate or elliptic, 16--21 cm. long, 4.1--5.5 cm. wide, attenuate to a subacuminate point at the apex (or obtuse and emarginate on stunted leaves), entire, acute at base, glabrate and sparsely punctate on both surfaces; midrib slender, flattened above, prominent beneath; secondaries very slender, 10--13 per side, arcuate-ascending, flattened or subprominulous above, sharply prominulous beneath, not conspicuously anastomosing at the margins; vein and veinlet reticulation very abundant, prominulous throughout above, plane beneath; inflorescence axillary, usually crowded at the tips of the branchlets, racemiform, 9.5--22 cm. long, about 1 cm. wide throughout, densely many-flowered, erect or nutant; peduncles slender, to 4.5 cm. long, usually more abbreviated, sparsely strigillose or glabrate; pedicels very slender, about 1 mm. long, sparsely strigillose or glabrate, spreading; prophylla equaling the pedicels, sessile, sharp-pointed; calyx campanulate, about 2 mm. long and wide, glabrous except for the puberulent rim; corolla about 5 mm. long, its limb about 5 mm. in diameter.

The type of this species was collected by Auguste Boniface Ghiesbreght -- in whose honor it is named -- in the state of Oaxaca, México, in 1842, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris.

CITHAREXYLUM HIDALGENSE Moldenke, Geogr. Distrib. 13, nom. nud. (1939), sp. nov.

Frutex vel arbor; ramis ramulisque obtuse tetragonis breviter hirsutis vel furfuraceis glabrescentibus; sarmentis gracilibus nigrescentibus sparse breviterque hirsutis; petiolis gracilibus hirsutis; foliis membranaceis oblongo-ellipticis vel subobovatis acutis vel breviter acuminatis integris vel ad apicem asymmetrico-angulatis, ad basin acutis vel subacuminatis glanduliferis, supra hirsuto-pubescentibus vel in senectute dense puberulis, subtus dense hirsutis; inflorescentiis axillaribus vel terminalibus nutantibus simplicibus multifloris.

Shrub or tree, to 7 m. tall; branches and branchlets medium, gray, obtusely tetragonal, short-hirsute or furfuraceous at the apex, soon becoming glabrescent, lenticellate; twigs slender, nigrescent in drying, sparsely short-hirsute; nodes obscurely annulate; principal internodes 1--3.5 cm. long; leaves decussate-opposite; leaf-scars large, borne on extremely large and massive, divergent-ascending, corky sterigmata to 5 mm. long; petioles slender, 1.5--3.3 cm. long, more or less hirsute; blades membranous, brunneous or nigrescent above in drying, lighter beneath, oblong-elliptic or elliptic to subobovate, 5.2--11 cm. long, 2--7.7 cm. wide, acute or short-acuminate at apex, asymmetrically angulate near the apex or entire, acute or subacuminate and often more or less asymmetrical at the base, usually bearing 1 or 2 black glands at the very base, shortly hirsute-pubescent above, becoming merely densely puberulent in age, densely hirsute (especially along the larger venation) beneath; midrib slender, not prominent on either surface; secondaries very slender, 5--8 pairs, arcuate-ascending, not prominent on either surface, conspicuous beneath only because of their more or less distichous pubescence; vein and veinlet reticulation obscure or indiscernible; racemes axillary or terminal, nutant, 8--16 cm. long, about 2 cm. wide in anthesis, simple, many-flowered; peduncles and rachis slender, more or less hirsute-pubescent, brown, the former 5--7 mm. long; pedicels filiform, about 2.5 mm. long, short-pubescent; bracts and bractlets none; prophylla linear-setaceous, about 1 mm. long; fruiting-calyx light, cupuliform, about 4 mm. long and 8 mm. wide, 5-ribbed, minutely puberulent or glabrescent, its rim shallowly 5-angulate or subentire; fruit oblong, about 10 mm. long and 7 mm. wide, fleshy, glabrous, shiny, wrinkled and blackening in drying.

The type of this species was collected by Cyrus Guernsey Pringle (no. 8969) below the Trinidad Iron Works, at an altitude of 5000 feet, Hidalgo, Mexico, on April 22, 1904, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is closely related to C. sessae D. Don and

is known also from Zacatecas, Veracruz, and Puebla.

CITHAREXYLUM MOCINI var. *LONGIBRACTEOLATUM* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit bracteolis elongatis linearibus vel spatulatis 4--25 mm. longis.

This variety differs from the typical form of the species in having the bractlets of its flowering racemes linear or narrowly spatulate, 4--10 mm. long, elongating in fruiting racemes to 25 mm. and then even more conspicuous, persistent.

The type of this variety was collected by Eizi Matuda (no. S.181) on Mount Pasitar, Chiapas, Mexico, on December 28, 1936, and is deposited in the Britton Herbarium at the New York Botanical Garden.

CITHAREXYLUM SHREVEI Moldenke, Geogr. Distrib. 14, nom. nud. (1939), sp. nov.

Frutex; ramis ramulisque gracilibus griseis subteretibus; sarmentis gracillimis obtuse tetragonis minute brevissimeque albido-puberulis; foliis oppositis; petiolis gracillimis vel obsolete; laminis chartaceis anguste oblongis vel ellipticis acutis vel obtusis integris revolutis, ad basin acutis vel subcuneatis, utrinque strigilloso-scabrellis.

Shrub; branches and branchlets slender, gray, subterete; twigs extremely slender and tenuous, white of very light gray, minutely puberulent with very short albidous hairs, obtusely tetragonal; nodes not annulate; principal internodes 0.4--2.5 cm. long; leaves decussate-opposite; petioles very slender and less than 1 mm. long or obsolete; blades chartaceous, gray-green on both surfaces, narrowly oblong or elliptic, 0.4 to 2.2 cm. long, 2.5--5.5 mm. wide, bluntly acute or obtuse at apex, entire and usually more or less revolute along the margins, acute or subcuneate at base, strigillose-roughened on both surfaces with minute albidous bulbous-based hairs; midrib very slender, very slightly prominent beneath; secondaries about 3 per side, very slender, usually indiscernible above and obscure beneath; vein and veinlet reticulation indiscernible; inflorescence and fruit not seen.

The type of this species was collected by Daniel Trembly MacDougal and Forrest Shreve (no. 59) at Picu Pass, Sonora, Mexico, on November 19, 1923, and is deposited in the United States National Herbarium at Washington. It is named in honor of my good friend, Dr. Forrest Shreve, of the Carnegie Institution's Desert Laboratory at Tucson, Arizona, who has contributed so much to our knowledge of the flora of the southwestern United States and Mexican deserts.

ALOYSIA BARBATA (T. S. Brandeg.) Moldenke, Prelim. Alph.

List Invalid Names 30 & 31, hyponym (1940), comb. nov.

Lippia barbata T. S. Brandeg., Proc. Calif. Acad. Sci., ser. 2, 2: 196. 1889.

CLERODENDRUM AFRICANUM Moldenke, sp. nov.

Frutex vel arbor; ramis ramulisque gracillimis submarginato-tetragonis glabris; foliis oppositis; petiolis glabris; laminis membranaceis anguste oblongo-ellipticis acutis, ad basin acutis vel attenuatis, utrinque pulverulentis vel glabris, subtus punctatis; inflorescentiis axillaribus; cymulis solitariis unifloris.

Tree or shrub; branches and branchlets very slender, brunnescent, submargined-tetragonal, glabrous; leaves opposite; petioles 1--4 mm. long, brunnescent, glabrous; blades membranous, dark-green (nigrescent in drying) above, paler beneath, narrowly oblong-elliptic, 1.5--5.5 cm. long, 5.5--14 mm. wide, acute at apex, acute or attenuate at base, pulverulent or glabrous on both surfaces, punctate beneath; midrib very slender, flat or subimpressed above, flat or very slightly subprominulous beneath, nigrescent; secondaries few, very slender, 2--5 per side, irregularly arcuate-ascending, plainly anastomosing near the margins, obscure or subimpressed above, flat and nigrescent beneath; vein and veinlet reticulation indiscernible on either surface; inflorescence axillary; cymules single, opposite, about equaling the subtending leaves, 1-flowered; corolla purple.

The type of this species was collected by J. Wylie in the Greytown District, Natal, Union of South Africa, in December, 1932, and is deposited in the Natal Government Herbarium at Durban.

CLERODENDRUM LIGUSTRINUM var. NICARAGUENSE Moldenke, Alph.

List Common Names 16 & 28, nom. nud. (1939); Geogr.

Distrib. 16 & 37, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit foliis et cymis axillaribus plerumque ternatis et laminis foliorum subtus constanter puberulentibus.

This variety differs from the typical form of the species in its leaves and axillary cymes being generally ternate and its leaf-blades being regularly puberulent beneath.

The type of this variety was collected by D. Chavez (no. 227) at Managua, Nicaragua, on July 26, 1926, and is deposited in the United States National Herbarium at Washington.

CLERODENDRUM PITTIERI Moldenke ex Standl., Field Mus. Publ.

Bot. 18: 1003, without Latin diag. (1938); Geogr. Dist.

rib. 15, 17, 19, 20, & 22, nom. nud. (1939), sp. nov.

Frutex vel fruticulus; ramis sarmentosis rigidis; ramulis

sarmentisque subgracilibus rigidis minute puberulis vel subglabrescentibus; internodiis abbreviatis; foliis oppositis vel ternatis; petiolis gracillimis 1--5 mm. longis pulverulento-puberulis vel glabratibus; laminis tenuiter chartaceis anguste ellipticis, ad apicem obtuse rotundatis, integris, ad basin acutis vel subcuneatis, utrinque glabris, subtus dense punctatis; inflorescentiis axillaribus, cymis abbreviatis 1--3-floris; pedunculis gracilibus minutissime puberulis; pedicellis subglabratibus.

Bush or shrub; branches twiggy, stiff; branchlets and twigs rather slender, light-gray, minutely puberulent with greatly appressed hairs, becoming subglabrate in age, the twigs often short, stiff, and sharp-pointed; nodes not annulate, marked with 2 or 3 aculeate leaf-scars; principal internodes much abbreviated, 3--30 mm. long; leaves decussate-opposite or ternate; petioles very slender, 1--5 mm. long, very obscurely pulverulent-puberulent or glabrate; blades thin-chartaceous, rather dark-green on both surfaces, narrowly elliptic, 6--24 mm. long, 3.5--10 mm. wide, rounded or obtuse at apex, entire, acute or subcuneate at base, glabrous on both surfaces but densely punctate beneath; midrib very slender, almost indiscernible or subimpressed above, prominulous beneath; secondaries very slender, 2--4 per side, indiscernible above, obscure beneath; vein and veinlet reticulation indiscernible; inflorescence axillary; cymes abbreviated, solitary, opposite, in the upper axils, 1--3-flowered, to 5.5 cm. long (including the mature flower), lax; peduncles slender, 8--14 mm. long, very minutely and obscurely puberulent with appressed hairs; pedicels slender, 5--8 mm. long, subglabrate; bracts and bractlets none; prophylla linear-subulate, few, 1--2 mm. long; calyx about 3 mm. long, minutely puberulent or glabrate, truncate; corolla white, about 2 cm. long, with a long and slender tube.

The type of this species was collected by Henri François Pittier de Fabrega (no. 4965) -- in whose honor it is named -- along the outskirts of the tidal belt and in savannas near sea-level at Aguadulce, Coclé, Panama, on December 5, 1911, and is deposited in the United States National Herbarium at Washington. The species is also known from Guatemala, Colombia, and Venezuela.

CLERODENDRUM SCHEFFLERI var. **ELLIPTICUM** Moldenke, var. nov.

Haec varietas a forma typica speciei recedit gracillimis sparse strigillosis; laminis tenuiter membranaceis late ellipticis acutis, ad basin acuminatis, utrinque sparsissime puberulento-strigillosis vel glabratibus.

This variety differs from the typical form of the species in the following characters: leaf-scars large, corky, elevated, with flaring margins; leaves opposite; petioles very

slender, 5--11 mm. long, sparsely strigillose; blades thin-membranous, darkgreen or brunescent above, lighter beneath, broadly elliptic, 2.8--8 cm. long, 1.7--4.7 cm. wide, acute at apex, acuminate at base, very sparsely puberulent-strigillose or glabrate on both surfaces; calyx parted half way or farther.

The type of this variety was collected by Maurice Smethurst Evans (no. 544a) at Berea, Durban, Natal, Union of South Africa, in October, 1894, at an elevation of 5000-6000 feet, and is deposited in the Natal Government Herbarium at Durban. It is described as a bush with violet flowers.

CLERODENDRUM SUFFRUTICOSUM var. *NATALENSE* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit foliis oppositis; laminis ellipticis vel subobovatis acuminatis vel subcaudatis, ad basin acuminatis, marginibus densiuscule irregulariterque inciso-dentatis (dentibus saepe incurvatis vel recurvatis), utrinque leviter adpresso-pubescentibus.

This variety differs from the typical form of the species in its leaves being opposite; petioles 3--7 mm. long, densely appressed-pubescent; blades membranous, elliptic or subobovate, dark-green above, lighter beneath, 2--4.5 cm. long, 1--2 cm. wide, acuminate at base and apex or subcaudate at apex, the margins rather deeply and irregularly incised with antrorse teeth which are often incurved or recurved at the tip, finely appressed-pubescent on both surfaces, more densely so beneath; calyx split half way to the base.

The type of this variety was collected by John Medley Wood (no. 657) at Inanda, Natal, Union of South Africa, in September, 1880, and is deposited in the Natal Government Herbarium at Durban. The collector states that four segments of the corolla are white and the fifth is violet. The variety is also known from Transvaal and Zululand.

GMELINA SPECIOSA Moldenke, sp. nov.

Arbor; ramulis gracilibus lenticellatis densissime puberulis; foliis oppositis; petiolis gracilibus densissime puberulis; laminis late ovatis vel deltoideis acutis vel breviter acuminatis integris, ad basin truncatis vel acutis vel breviter acuminatis, supra glabratissimis nitidulis, subtus densissime adpresso-puberulis; inflorescentiis terminalibus paniculatis; calyce glanduloso.

Tree, to 8 m. tall; branchlets slender, prominently lenticellate, very densely puberulent with yellowish-brown puberulence, becoming less conspicuously so in age; leaves decussate-opposite; petioles slender, 2--5 cm. long, very densely puberulent; blades broadly ovate or deltoid, dark-green above, gray beneath, 6--20 cm. long, 4.3--11.5 cm. wide, acute or short-acuminate at apex, entire, varying from trunc-

ate to abruptly acute or short-acuminate at base, glabrate and rather shiny above, extremely densely appressed-puberulent with gray puberulence beneath; inflorescence terminal, paniculate; flowers very large; calyx distinctly glandulose, the glands small, numerous, basal.

The type ofⁿ this species was collected by Benedict Balansa (no. 3806) in forests in the valley of Lankok, Mont-Bavi, Tonkin, French Indo-china, on June 24, 1887, and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

GMELENA TONKINENSIS Moldenke, sp. nov.

Frutex subspinosus; ramulis gracillimis dense breviterque pubescentibus vel dense puberulis; foliis oppositis; petiolis gracillimis dense breviterque pubescentibus; laminis ovatis acutis vel breviter acuminatis integris, ad basin cordatis vel truncatis vel abrupte acutis, supra sparsissime strigilloso-pubescentibus glabrescentibus, subtus dense breviterque pubescentibus et puberulis; inflorescentiis terminalibus racemiformibus; calyce distincte glanduloso.

Somewhat spiny shrub; branchlets very slender, the younger parts densely short-pubescent with fulvous hairs, the older parts merely densely puberulent, sparsely but prominently lenticellate; leaves decussate-opposite; petioles very slender, 0.8--6 cm. long, densely short-pubescent with fulvous hairs like the young twigs; blades thin-chartaceous or membranous, ovate, 3.7--13 cm. long, 2.5--9.1 cm. wide, acute or short-acuminate at apex, entire, varying from cordate or truncate to abruptly acute at base, very sparsely strigillose-pubescent (especially along the larger venation) above, becoming glabrous, densely short-pubescent beneath over the lower puberulence; inflorescence terminal racemiform; calyx small, with distinctive large glands at its apex.

The type of this species was collected by Benedict Balansa (no. 3807) along the sides of the road leading from Tutchap to the rocks of Notre Dame, Tonkin, French Indo-china, in May or June, 1887, and is deposited in the herbarium of the Jardin Botanique Principal at Leningrad.

LANTANA FRUTILLA Moldenke, sp. nov.

Frutex; ramis griseis obtuse tetragonis sparsissime strigilloso-pubescentibus; ramulis sarmentisque pergracilibus elongatis brunneis sparse strigillosis; foliis oppositis; petiolis gracilibus sparse albido-strigillosis; laminis membranaceis ovatis acutis vel subacuminatis, ad basin rotundatis vel abrupte acuminatis, regulariter serratis, supra sparse strigillosis, subtus dense breviterque pubescentibus; inflorescentiis axillaribus; capitulis numerosis.

Shrub, to 1.5 m. tall; branches woody, gray, obtusely tetragonal, very sparsely strigillose-pubescent with scat-

tered white hairs; branchlets and twigs very slender, elongate, brownish, submargined on the obtuse angles, sparsely strigillose like the branches; leaves decussate-opposite; petioles slender, 3--5 mm. long, sparsely whitish-strigillose; blades membranous, bright-green above, somewhat lighter beneath, ovate, 1.8--6 cm. long, 1--3 cm. wide, acute or subacuminate at apex, rounded at base or abruptly acuminate and prolonged into the petiole, uniformly serrate from the widest part to the apex with rather appressed acute or bluntish teeth, sparsely strigillose above, densely short-pubescent beneath; inflorescence axillary; heads solitary in the axils and opposite, numerous, 1--2 cm. long, to 1 cm. wide, densely many-flowered; corolla-tube about 4 mm. long, its limb about 3 mm. in diameter.

The type of this species was collected by George B. Hinton (no. 6455) in I. R. F. Outzemala, at Pungarabato, Coyuca, Guerrero, Mexico, on August 17, 1934, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species is also known from Michoacán, Morelos, Hidalgo, Chiapas, and the state of México.

LANTANA GROSSESERRATA Moldenke, sp. nov.

Frutex; ramulis acute tetragonis sparsiuscule adpresso-strigosis; foliis oppositis; petiolis brevissimis substrigoso-pubescentibus; laminis chartaceis ellipticis ad basin et apicem acuminatis, supra mediam grosse serratis, supra sparsissime brevissimeque pilosulis, subtus dense rebinoso-punctatis in venatio sparsissime brevissimeque pilosulis; inflorescentiis axillaribus longe pedunculatis capitatis; bracteolis perspicuis numerosis elongatis anguste ellipticis.

Straggling shrub, to 2.5 m. tall; branchlets slender, acutely tetragonal, rather sparsely or densely appressed-strigose with yellowish hairs; nodes rather obscurely annulate; principal internodes 5--9 cm. long; leaves decussate-opposite; petioles very much abbreviated, 5--7 mm. long, densely short-pubescent with substrigose hairs; blades chartaceous, slightly lighter beneath, elliptic, 7--12.5 cm. long, 2.8--4.8 cm. wide, attenuate-acuminate at base and apex, coarsely and rather irregularly serrate-dentate from about the middle to the apex with sharply acute broadly triangular and divergent teeth, very sparsely and minutely pilosulous above, densely resinous-punctate beneath and also very sparsely short-pilosulous on the venation beneath; midrib slender, prominulous above, prominent beneath; secondaries slender, 5 or 6 per side, arcuate-ascending, mostly plane above, prominent beneath, not plainly anastomosing; veinlet reticulation obscure or indiscernible above, plane and not very conspicuous beneath; inflorescence axillary,

long-pedunculate, capitate; peduncles slender, 6.5--7.5 cm. long, rather sparsely strigose; bractlets numerous, conspicuous, narrowly elliptic, elongate, 6--20 mm. long, 2--4 mm. wide, densely resinous-punctate, venose, appressed-strigillose on the venation, acute at apex; corolla white, its tube about 6 mm. long, its limb about 2 mm. wide; drupes black.

The type of this distinct species was collected by Alexander Frank Skutch (no. 4128) in a bushy clearing, at an altitude of 730 m., in the vicinity of El General, San José, Costa Rica, in February, 1939, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LANTANA MEARNsii Moldenke, sp. nov.

Frutex; ramis gracilibus obtuse tetragonis densiuscule hirsutulo-pubescentibus, in senectute scabridis; foliis ternatis; petiolis plusminus marginatis dense breviterque subadpresso-pubescentibus; laminis lanceolatis vel ellipticis acutis regulariter crenatis, ad basin acutis vel acuminatis, supra dense puberulis scabris saepe bullatis, subtus densissime canescento-puberulis.

Shrub; stems slender, obtusely tetragonal, rather densely hirsutulous-pubescent, scabridous in age; branches similar, more slender, more densely hirsutulous-pubescent; nodes not annulate; principal internodes 1.5--7.5 cm. long; leaves ternate; petioles 3--8 cm. long, more or less margined, densely short-pubescent with mostly subappressed hairs; blades thin-chartaceous, dark-green above (brunnescent in drying), much lighter beneath, lanceolate or elliptic, 2.5--7.5 cm. long, 1.5--3.3 cm. wide, acute at apex, acute or acuminate at base, regularly crenulate with blunt antrorse teeth except at the very base, densely puberulent and scabrous above, often more or less bullate, very densely canescent-puberulent; midrib, secondaries, and veinlet reticulation impressed above, often deeply so, prominulous beneath; inflorescence spicate, subcapitate when young, later elongating, opposite or ternate, long-pedunculate; peduncles slender, 1.5--8.5 cm. long, densely puberulent; spikes 1.5--2 cm. wide, elongated to 1.5 cm. in age; outer bractlets large and foliaceous, broadly elliptic or ovate, 7--14 mm. long, 4--9 mm. wide, acute, entire, venose, densely puberulent; corolla about 1 cm. long, its limb about 5 mm. in diameter.

The type of this species was collected by Edgar Alexander Mearns on the Smithsonian Institution Expedition under the direction of Colonel Theodore Roosevelt in the vicinity of Fort Hall, at an altitude of about 1200 m., Kenya, between September 10 and 12, 1909, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species has been widely confused in literature and herbaria with the South African *L. salvifolia* Jacq. and the tropical American

L. trifolia L., from both of which it is quite distinct.

LANTANA NOTHA Moldenke, sp. nov.

Frutex; ramulis dense albido-puberulis et plusminus dense albido-hirsutis inermibus vel minute sparsissimeque aculeolatis; petiolis pergracilibus dense puberulis et hirsutis; laminis chartaceis ovatis acutis grosse serratis, ad basin subtruncatis vel abrupte acutis, utrinque dense cinereo-pubescentibus; inflorescentiis axillaribus capitatis; bracteis lanceolatis vel oblongis dense cinereo-puberulis.

Shrub; branchlets slender, obtusely tetragonal, densely white-puberulent and also more or less densely white-hirsute with hairs 2 or 3 times as long, more densely so toward the apex and on younger parts, unarmed or armed with a very few minute prickles; nodes usually annulate with a band of dense or hirsute hairs; principal internodes 4--7.5 cm. long; leaves decussate-opposite; petioles very slender, 3--12 mm. long, very densely white-puberulent and hirsute; blades thin-chartaceous, uniformly gray-green on both surfaces, ovate, 1.6--5 cm. long, 1--2 cm. wide, acute at apex, coarsely serrate from base to apex with broadly triangular subacute teeth, subtruncate at base (or abruptly acute when immature), somewhat prolonged into the petiole at the middle, densely cinereous-pubescent on both surfaces, the hair substrigose above; midrib slender, subimpressed and more densely pubescent above, prominulous beneath; secondaries very slender, 4--6 per side, short, ascending, not much arcuate, subimpressed and not pubescent above, prominulous beneath; veinlet reticulation abundant, the larger portions subimpressed and not pubescent above and subprominulous beneath; inflorescence axillary, capitate, surpassing the subtending leaves; peduncles slender, 3--7 cm. long, grayish-puberulent and also more or less sparsely white-hirsute; heads 1.2--2.3 cm. wide, many-flowered; bractlets lanceolate or oblong, 5--6 mm. long, 1--2 mm. wide, blunt or subacute at apex, densely cinereous-puberulent; corolla-tube 7--8 mm. long, its limb about 5 mm. wide.

The type of this species was collected by Joseph Nelson Rose, Paul Carpenter Standley, and Paul George Russell (no. 13573) along the river in the vicinity of Fuerete, Sinaloa, Mexico, on March 27, 1910, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LANTANA SCABRIFOLIA Moldenke, sp. nov.

Herba sublignosa; caulibus obtuse tetragonis, in juventute adpresso-strigosis, in senectute minute asperulis vel glabratibus; foliis oppositis breviter petiolatis; laminis firme chartaceis ovatis obtusis regulariter crenulatis, ad basin rotundatis vel subtruncatis, supra scaberrimis, sub-

tus dense puberulis; inflorescentiis axillaribus longe pedunculatis; spicis subcapitatis oblongis dense multifloris valde bracteolatis.

Probably a rather woody herb; stems apparently not much branched or simple, obtusely tetragonal, at first densely appressed-strigose, later minutely asperulous, finally glabrate; nodes annulate; principal internodes 4.5--7 cm. long; leaves opposite, usually with several smaller ones on greatly abbreviated twigs in their axils; petioles very slender, 5--7 mm. long, sparsely puberulent and asperulous, canaliculate above; blades firmly thick-chartaceous, rather uniformly gray-green on both surfaces, ovate, 2--7.5 cm. long, 1.4--3.7 cm. wide, obtuse at apex, regularly crenulate from apex to base, rounded or subtruncate at base, very scabrous above, densely puberulent and slightly scabridous beneath; midrib, secondaries, and veinlet reticulation impressed above and prominent beneath; inflorescence axillary, paired in each axil near the tip of the stem; peduncles very slender, 2.5--4.5 cm. long, densely appressed-puberulent, ascending; spikes subcapitate, becoming oblong and to about 1 cm. long, 8--10 mm. wide, densely many-flowered; bractlets lanceolate-ovate, conspicuous, the lowermost ones to 6 mm. long and 2 mm. wide, long-attenuate to the apex, densely puberulent; flowers equaling or barely exceeding the bractlets; corolla-limb about 2 mm. in diameter.

The type of this species was collected by Edgar Alexander Mearns (no. 267) on the Smithsonian African Expedition under the direction of Colonel Theodore Roosevelt in the vicinity of Nairobi on the Uganda Railway, at an altitude of about 2000 m., Kenya, between May 26 and June 1, 1909, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species has hitherto been confused with L. salviaefolia Jacq., of South Africa, which has much smaller leaves and larger flowers.

LIPPIA CONTROVERSA Moldenke, sp. nov.

Frutex; ramulis gracilibus sparse hirsutis glabrescentibus; foliis crasse chartaceis ovatis vel ovato-ellipticis acutis vel breviter acuminatis regulariter serrulatis, ad basin rotundatis, supra bulboso-pilosis scaberrimis, subtus sparsissime hirsutis; inflorescentiis axillaribus, pedunculis solitariis vel geminatis simplicibus; capitulis valde bracteatis.

Shrub, to 2 m. tall; branchlets slender, stramineous, obtusely tetragonal, sparsely hirsute, becoming glabrate in age; nodes flattened, annulate; principal internodes 3--9 cm. long; leaves decussate-opposite; petioles rather stoutish, short, 5--10 mm. long, sparsely hirsute, more or less margined; blades thick-chartaceous, uniformly gray-green on

both surfaces, ovate or ovate-elliptic, 3.5--7 cm. long, 1.5--4.5 cm. wide, acute or short-acuminate at apex, regularly serrulate from base to apex, rounded at base and more or less attenuate into the petiole at the center, acute when immature, densely and harshly pilose above with bulbous-based hairs and very rough-scabrous, very sparsely hirsute or almost subglabrous beneath; midrib slender, plane or impressed above, prominent beneath; secondaries slender, 7 or 8 per side, arcuate-ascending, mostly impressed above, prominent beneath; veinlet reticulation abundant, mostly impressed above, plane or the larger portions subprominulous beneath; inflorescence axillary, simple, capitate; peduncles very slender, one or two from each of the upper leaf-axils, 2.5--4 cm. long, densely short-pubescent or puberulent with glandular hairs; heads 1.5--2.3 cm. wide; bracts very large and conspicuous, numerous, ovate, the lowermost about 10 mm. long and 6 mm. wide, acute, densely puberulent; corolla cream-colored or pale greenish-yellow.

The type of this species was collected by Paul Carpenter Standley (no. 58067) on a brushy slope near Las Lajas, Sacatepéquez, at an altitude of about 1200 m., Guatemala, on November 28, 1938, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is also known from Escuintla.

LIPPIA COSTARICENSIS Moldenke, sp. nov.

Arbor; ramulis acute tetragonis saepe submarginatis plusminus substrigoso-pilosis; foliis oppositis; petiolis brevibus plusminus adpresso-strigosis; laminis chartaceis anguste ellipticis serrulatis, ad basin et apicem attenuatis acutis vel acuminatis, supra minute strigillosis glabrescentibus, subtus minute puberulis; inflorescentiis axillaribus paniculatis.

Tree, to 18 m. tall; branchlets stoutish or rather slender, acutely tetragonal, often submarginated, more or less substrigose-pilose; nodes plainly annulate, often conspicuously so; principal internodes 2--4.5 cm. long; leaves decussate-opposite; petioles slender, 1--2 cm. long, usually short, more or less appressed-strigose; blades chartaceous, rather uniformly green on both surfaces, narrowly elliptic, 8--18 cm. long, 1.5--5 cm. wide, attenuate and acute or acuminate at base and apex, regularly serrulate from base to apex with very fine rounded and appressed teeth, often subrevolute along the margins, minutely strigillose above, glabrescent and merely punctate in age, minutely puberulent beneath, often only on the venation; midrib rather stout, plane above, prominent beneath; secondaries slender, 8--10 per side, plane above, prominent beneath; veinlet reticulation abundant, plane (often obscure) above, the larger portions

subprominulous beneath; inflorescence axillary, paniculate, with 1--3 whorls of capitate branches subtended by more or less foliaceous bracts; heads 5--10 mm. wide, conspicuously bracteolate; bractlets large, ovate, stramineous, the lowermost about 6 mm. long and 4 mm. wide, minutely puberulent; corolla yellow.

The type of this species was collected by Alexander Frank Skutch (no. 2292) at an altitude of 915 m., in the vicinity of El General, San José, Costa Rica, in December, 1935, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is also known from Alajuela.

LIPPIA CURTISIANA Moldenke, sp. nov.

Frutex; ramis ramulisque gracilibus dense breviterque pubescentibus, pilis sordidis; foliis oppositis vel ternatis; petiolis gracilibus brevibus dense breviterque pubescentibus; laminis chartaceis saepe falcatis ovatis acutis regulariter serrulatis, ad basin abrupte acutis, supra strigosis scabris bullatis, subtus breviter pubescentibus; inflorescentiis axillaribus capitatis simplicibus abbreviatis confertis; bracteolis maturis reniformibus venosis magnis densis.

Shrub; branches and branchlets slender, gray, obtusely tetragonal, densely short-pubescent with sordid appressed hairs, glabrescent in age; nodes not annulate; principal internodes 0.5--3 cm. long; leaves decussate-opposite or ternate; petioles slender, 4--7 mm. long, densely short-pubescent with appressed sordid hairs; blades chartaceous, often falcate and conduplicate in drying, rather uniformly grayish-green on both surfaces or slightly lighter beneath, ovate, 1.5--5.5 cm. long, 0.8--3.4 cm. wide, acute at apex, regularly serrulate with small blunt appressed or spreading teeth from almost the base to the apex and usually slightly revolute, abruptly acute or rounded at base, strigose and scabrous-bullate above, short-pubescent beneath (especially along the venation); midrib very slender, subimpressed above, prominulous beneath; secondaries very slender, 4--8 per side, ascending, not much arcuate, impressed above, prominulous beneath; vein and veinlet reticulation abundant, more or less impressed above and often subprominulous beneath; inflorescence axillary, capitate, simple, abbreviated; peduncles very slender, usually 3 per axil, 0.7--2 cm. long, densely appressed-pubescent with sordid-gray hairs; heads to 9 mm. wide in anthesis, to 13 mm. wide in fruit; bractlets ovate, the lowermost to 4 mm. long and 3 mm. wide, densely appressed-puberulent, in fruit greatly expanded and reniform, venose, to 9 mm. wide, stramineous.

The type of this species was collected by Edward Palmer (no. 479) at the city of Durango and vicinity, at an alti-

tude of 6207 feet, Durango, Mexico, between April and November, 1896, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is named in honor and grateful appreciation of Dr. Carleton Clarence Curtis, for many years professor of botany at Columbia University, author of valuable texts, inspiring teacher, and valued friend and adviser of hundreds of the present generation of American botanists, who will always honor and revere his memory.

LIPPIA DURANGENSIS Moldenke, sp. nov.

Fruticulus; ramulis gracilibus dense adpresso-pubescentibus; foliis oppositis vel ternatis vel quaternatis; petiolis gracillimis dense puberulis et resinoso-glandulosis; laminis tenuiter chartaceis ellipticis saepe subfalcatis acutis regulariter serratis, ad basin acutis vel acuminatis, supra scaberrimis, subtus densiuscule puberulis et resinoso-punctatis; inflorescentiis axillaribus capitatis confertis simplicibus.

Shrub; branchlets slender, obtusely tetragonal, brownish, densely appressed-pubescent; nodes annulate; principal internodes 3--7 cm. long; leaves opposite, ternate, or whorled in 4's; petioles very slender, 5--7 mm. long, densely puberulent and resinous-glandular, less so in age; blades thin-chartaceous, dark-green above, much lighter beneath, elliptic, often falcate and more or less conduplicate in pressing, 4--6 cm. long, 1.3--3 cm. wide, acute at apex, regularly serrate from almost the base to the apex with rather small rounded and often appressed teeth, acute or acuminate at base, very rough-scabrous above, rather densely puberulent and resinous-punctate beneath; midrib slender, plane or subimpressed above, prominulous beneath; secondaries very slender, 5--8 per side, arcuate-ascending, subimpressed above, prominulous beneath; veinlet reticulation abundant, subimpressed above, the larger portions prominulous beneath; inflorescence axillary, capitate, simple, crowded; peduncles very slender, 1--3.5 cm. long, 2--5 or more in each axil, more or less densely short-pubescent with subtrigose whitish hairs, often also resinous-punctate; heads 6--9 mm. in diameter; bracts large and conspicuous, ovate, very plainly venose with a conspicuous reticulum, the lowest about 5 mm. long and wide, acute at apex, puberulent-margined; corolla greenish-yellow.

The type of this species was collected by Francis Whittier Pennell (no. 18189) on a rocky andesitic slope, at an altitude of 1900--2000 m., at Chupaderos, north of Durango, in the Sierra Madre Occidental, Durango, Mexico, on August 24, 1934, and is deposited in the United States National Herbarium at Washington. The beautifully venose bracts are quite characteristic.

LIPPIA INDICA Moldenke, sp. nov.

Herba perennis; caulibus ramulisque gracilibus obtuse tetragonis dense hirsutulis vel breviter pubescentibus vel incano-puberulentis; nodis annulatis; foliis oppositis; petiolis gracilibus albido-hirsutis; laminis chartaceis ovatis obtusis serratis, supra bullatis densiuscule strigosis, subtus dense tomentulosis; inflorescentiis axillaribus spicatis; spicis elongatis.

Perennial herb; stems and branches slender, obtusely tetragonal, densely hirsutulous or short-pubescent, becoming more sparsely so or merely puberulent in age, the hairs whitish; nodes annulate; leaves decussate, often with fascicles of small ones on greatly abbreviated twigs in their axils; petioles slender, 3--15 mm. long, very densely or sparsely hirsute with whitish hairs; blades chartaceous, gray-green, ovate, 0.8--7.5 cm. long, 0.6--3.5 cm. wide, obtuse at apex, regularly serrate from base to apex with extremely small and blunt somewhat appressed teeth, very bullate and rather densely strigose with appressed whitish hairs above, densely tomentulose beneath; inflorescence axillary, clustered toward the tips of the branches, spicate; spikes elongate, 2--5.5 cm. long, 1--3 in each upper axil, erect or ascending, the floriferous part 0.4--2.6 cm. long, uniformly 5--6 mm. wide throughout; peduncles very slender, 1.5--2.6 cm. long, densely short-pubescent or puberulent with whitish hairs, often binary.

The type of this species was collected by James Sykes Gamble (no. 17895) at Sigúe Ghát, at an altitude of 3000 feet, Nilgiri district, Madras, India, in August, 1886, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species is also known from Coimbatore.

LIPPIA JALISCANA Moldenke, sp. nov.

Frutex vel arbor; ramis ramulisque gracilibus brunneis tetragonis breviter pilosis valde scabris; foliis oppositis; petiolis gracilibus brevibus breviter pilosis scabris; laminis coriaceis lanceolatis acutis regulariter serrulatis, ad basin acutis vel acuminatis, supra bullatis scaberrimis, subtus puberulis dense glanduloso-punctatis; inflorescentiis axillaribus paniculatis vel raro simplicibus capitatis.

Shrub or small tree; branches and branchlets slender, brown, tetragonal, shortly appressed-pilose, decidedly scabrous, especially on the margins; nodes annulate; principal internodes 1.5--6 cm. long; leaves decussate-opposite; petioles very slender, 4--17 mm. long, short-pilose and scabrous; blades coriaceous, rather uniformly green on both surfaces or slightly lighter beneath, lanceolate, 4--11 cm. long, 1.7--3.2 cm. wide, acute at apex, regularly serrulate from almost the base to the apex with blunt more or less ap-

pressed revolute teeth, acute or acuminate at base, bullate and very scabrous above, puberulent and densely glandular-punctate beneath; midrib slender, plane or subimpressed above, prominent beneath; secondaries very slender, 8--10 per side, arcuate-ascending, impressed above, sharply prominent beneath; vein and veinlet reticulation abundant, impressed above, sharply prominent beneath; inflorescence axillary, mostly paniculate with the heads borne in secondary umbels of 3--6, rarely a few simple ones included; peduncles very slender, 2--4 cm. long, densely short-pubescent with spreading brownish hairs; secondary peduncles 1--1.5 cm. long; heads 6--10 mm. wide in anthesis, densely many-flowered; bractlets ovate, about 3 mm. long and wide, sharply acute at apex, densely puberulent; corolla greenish-yellow, exceeding the bractlets.

The type of this species was collected by Ynes Mexia (no. 1636) in an oak-clad open forest on steep slopes on the trail from Real Alto to San Sebastian, at an altitude of 2000 m., in the Sierra Madre Occidental, Jalisco, Mexico, on February 3, 1927, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LIPPIA TRANSVALENSIS (Kuntze) Moldenke, comb. nov.

Camara salviaefolia p. *transvalensis* Kuntze, Rev. Gen. Pl. 3, part 2: 250. 1898.

LIPPIA WHYTEI Moldenke, sp. nov.

Herba; ramis obtuse tetragonis brunneis dense breviterque pubescentibus vel puberulis; nodis valde annulatis; foliis oppositis breviter petiolatis; laminis lanceolatis acutis vel breviter acuminatis, ad basin acutis vel acuminatis, crenulatis, supra bullatis scaberrimis, subtus tomentellis; inflorescentiis axillaribus sessilibus vel subsessilibus geminatis; spicis subcapitatis dense multifloris.

Herb; stems and branches slender, obtusely tetragonal, brownish, the younger parts densely short-pubescent with sordid hairs, the older parts puberulent with minute brownish hairs; nodes plainly annulate; principal internodes 1.5--4.5 cm. long; leaves opposite; petioles 2--5 mm. long, alate-margined, sparsely short-pubescent; blades firmly chartaceous, dark-green above, lighter beneath, lanceolate or elliptic, 2.5--4 cm. long, 8--18 mm. wide, acute or short-acuminate at apex, regularly crenulate from base to apex, acute or acuminate at base, bullate and very scabrous above, densely tomentellous with sordid-grayish hairs beneath; midrib, secondaries, and veinlet reticulation deeply impressed above, only the larger portions (midrib and secondaries) prominulous beneath; inflorescence axillary, abundant toward the tips of the branches, a pair in each axil;

spikes sessile or subsessile, subcapitate, to about 12 mm. long and 10 mm. wide, very densely many-flowered; bractlets ovate, about 2 mm. long, sharply acute or short-acuminate, strigose with short sericeous hairs; flowers very small, hardly exceeding the bractlets.

The type of this species was collected by Alexander Whyte in northern Nyasaland, and is deposited in the Britton Herbarium at the New York Botanical Garden. It has hitherto been confused with Lantana salvifolia Jacq., of South Africa, with long-pedunculate heads and fleshy fruits.

PRIVA PEDICELLATA Moldenke, Geogr. Distrib. 32, nom. nud. (1939), sp. nov.

Herba; caulibus ramisque gracilibus argute tetragonis breviter pubescento-strigillosis vel puberulis; foliis oppositis; petiolis gracillimis sparsiuscule breviterque pubescento-strigillosis; laminis submembranaceis ovatis acutis vel obtusis serratis, ad basin subtruncatis vel subcordatis vel abrupte acutis, utrinque sparsiuscule strigillosis vel albido-strigosis; inflorescentiis terminalibus racemiformibus erectis laxe multifloris; pedicellis gracillimis elongatis.

Herb, to 5 dm. tall; stems and branches slender, sharply acute, shortly pubescent-strigillose, becoming sparsely so or merely puberulent in age, the older parts gray, the younger ones turning brown in drying; nodes annulate on young parts, indistinctly so or not annulate on older parts, not swollen; principal internodes 1.3--7.5 cm. long; leaves decussate-opposite; petioles very slender, 5--11 mm. long, rather sparsely short-pubescent or strigillose, flattened above, convex beneath, not noticeably ampliate at base; blades submembranous, rather uniformly bright-green on both surfaces or slightly lighter beneath, ovate, 2--3.8 cm. long, 1--2.5 cm. wide, acute or obtuse at apex (in outline), varying from subtruncate or subcordate to abruptly acute at base, usually somewhat prolonged into the apex of the petiole at the center, rather coarsely serrate from near the base to the apex with broad and acute antrorse teeth, rather sparsely strigillose or strigose with distant appressed non-bulbous hairs on both surfaces; midrib very slender, plane above, slightly subprominulous beneath; secondaries very slender, 3 or 4 per side, ascending, not much arcuate, plane on both surfaces, not conspicuously anastomosing; vein and veinlet reticulation very delicate, obscure or indiscernible above, plane beneath; inflorescence terminal, racemiform, 7--17 cm. long, 0.5--2 cm. wide in anthesis, loosely many-flowered, erect; peduncles (2.5--3.8 cm. long) and rachis exactly similar to the adjacent branches or stems in color, shape, texture, and pubescence; pedicels very slender, elon-

gate, 5--7 mm. long in anthesis, rather sparsely short-pubescent or puberulent; prophylla about 2 mm. long, lanceolate-ovate, attenuate-acuminate at apex, sessile, puberulent; fruit not seen.

The type of this remarkable species was collected by A. E. English somewhere in Burma and is deposited in the B. H. Lace Herbarium, purchased in 1918 by the Royal Botanic Garden at Edinburgh.

SPARTOTHAMNELLA TEUCRIIFLORA (F. Muell.) Moldenke, Geogr.

Distrib. 34, nom. nud. (1939); Prelim. Alph. List Invalid Name 40, hyponym (1940), comb. nov.

Spartothamnus teucriflorus F. Muell. in Wing, South. Sc. Record 2: 55. 1882.

STACHYTARPHETA PRANTZII var. *PATENTIFLORA* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit calycibus rhachidem non arcte adpressis et pilis ubique sparsioris.

This variety differs from the typical form of the species in having its rachis more slender and often slightly flexuous, the bractlets and calyxes not closely appressed to and sunken in the rachis, but more or less spreading before, during, and after anthesis, and the pubescence throughout (especially on the rachis, bractlets, and calyx) more sparse.

The type of this variety was collected by Adolfe Tonduz (no. 626) in broken ground near Guatemala City, Guatemala, at an altitude of 1400 m., in July, 1921, and is deposited in the Britton Herbarium at the New York Botanical Garden.

STACHYTARPHETA GUATEMALENSIS var. *LUNDELLIANA* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit ramulis foliisque spicisque plusminus adpresso-pilosis et laminis foliorum majoribus crassiore serratis.

This variety differs from the typical form of the species in having the branchlets, petioles, leaf-blades, peduncles, rachis, bractlets, and calyxes more or less appressed-pilose with very short and sparse whitish hairs, and in having the leaf-blades larger, to 8 cm. long and 4 cm. wide, more attenuate and sharply acute or subacuminate at apex, and much more coarsely serrate with broadly triangular and spreading sharply acute or apiculate teeth.

The type of this variety was collected by Eizi Matuda (no. 1762) at Finca Suarez, Chiapas, Mexico, on August 12, 1937, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is named in honor of my esteemed friend and colleague, Dr. Cyrus Longworth Lundell of the University of Michigan, who is doing such important and note-

worthy work on the flora of Mexico and Central America.

STACHYTARPHETA HINTONI Moldenke, sp. nov.

Herba perennis (?); ramis gracilibus dense breviterque pubescentibus vel puberulis subglabrescentibus; foliis oppositis; petiolis gracilibus alatis dense vel sparse breviterque pubescentibus; laminis membranaceis ellipticis acutis vel acuminatis serratis, ad basin longiuscule acuminatis, utrinque sparse strigillosis; rhachide valde excavato pubescente vel puberulo.

Perennial herb (?); stems and branches slender, buff-colored, rather densely short-pubescent when young, becoming merely puberulent or even subglabrate in age; leaves decussate-opposite; petioles slender, 8--10 mm. long, alate-margined, densely or sparsely short-pubescent; blades membranous, very brittle and fragile in drying, elliptic, 5.5--9.5 cm. long, 3--5 cm. wide, acute or acuminate at apex, rather long-acuminate at base and prolonged into the petiole at the center, regularly or irregularly serrate (except on the basal and apical acuminations) with coarse acute antrorse somewhat divergent teeth, sparsely strigillose on the lamina above with short appressed antrorse whitish hairs, similarly strigillose on the venation beneath; inflorescence terminal, spicate, 12--27 cm. long, densely many-flowered, nutant before anthesis, erect in fruit, the flowers closely appressed and imbricate, sunken into the deeply excavated short-pubescent or puberulent rachis; bractlets lanceolate-ovate, 8--10 mm. long, to 2.5 mm. wide at base, sharply attenuate at apex, sparsely puberulent.

The type of this species was collected by George B. Hinton (no. 8236) -- in whose honor it is named -- in a shaded barranca at Luvianos, Temascaltepec, México, Mexico, on September 29, 1935, and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

STACHYTARPHETA INCANA Moldenke, Prelim. Alph. List Invalid

Names 46, hyponym (1940), sp. nov.

Fruticulus; ramulis gracilibus tetragonis dense incano-strigillosis; foliis oppositis sessilibus; laminis tenuiter chartaceis ovato-ellipticis vel ellipticis acutis vel subacuminatis argute serratis, ad basin longe caudatis, supra sparsiuscule strigillosis, subtus densissime puberulento-strigillosis vel subvelutinis; rhachide valde excavato densissime incano-strigilloso.

Shrubby; branchlets rather slender, gray-brown, rather plainly tetragonal, densely incanous-strigillose with very short antrorsely appressed hairs; nodes not distinctly annulate; principal internodes 1.5--5 cm. long; leaves decussate-opposite, regularly disposed to the base of the spikes,

sessile; blades very thin-chartaceous, dark-green on both surfaces, brunnescenscent in drying, ovate-elliptic or elliptic, 4.5--8.5 cm. long, 1.7--3.7 cm. wide, sharply acute or subacuminate at apex, long-caudate at base, sharply serrate with antrorse teeth except on the basal prolongation and at the very apex, rather sparsely strigillose above, very densely puberulent-strigillose beneath (subvelutinous on the larger venation); midrib slender, plane above, subprominulous beneath; secondaries slender, 3--5 per side, arcuate-ascending; spikes terminal, 17--19 cm. long, about 5 mm. wide throughout exclusive of the corollas; peduncles 10--12 mm. long, incanous-strigillose; rachis very densely incanous-strigillose, deeply excavated; bractlets broadly ovate, about 5 mm. long and 3 mm. wide at base, abruptly acuminate on the upper $1/3$, incanous-strigillose and ciliate, but not as densely strigillose as the rachis.

The type of this species was collected by Martin Sessé, José Mariano Mociño, Juan Diego del Castillo, and José Maldonado (no. 137) somewhere in Mexico between 1787 and 1804, and is deposited in the herbarium of the Jardín Botánico at Madrid. The species is known otherwise only from Guerrero.

STACHYTARPHETA INCANA var. ANGUSTIBRACTEATA Moldenke, Prelim. Alph. Lis Invalid Names 44, hyponym (1940), var. nov.

Haec varietas a forma typica speciei recedit spicis elongatis angustioribus et bracteolis lanceolatis, ad basim 1 mm. latis, ad apicem longissime acuminato-caudatis.

This variety differs from the typical form of the species in its somewhat more slender and more elongated spikes, which are 28--30 cm. long, and its lanceolate bractlets, only 1 mm. wide at base and very long-acuminate-caudate at the apex.

The type was collected by Sessé, Mociño, Castillo, & Maldonado (no. 136) somewhere in Mexico between 1787 and 1804, and is deposited in the herbarium of the Jardín Botánico at Madrid. The variety is otherwise known from San Luis Potosí, Nayarit, Sinaloa, Veracruz, and Oaxaca.

VERBENA LITORALIS var. ALBIFLORA Moldenke, var. nov.

Haec varietas a forma typica speciei recedit corollas albis.

This variety differs from the typical form of the species in its white corollas.

The type was collected by George B. Hinton (no. 13,965) in a llano at an altitude of 1000 m., Coalcoman, district of Coalcoman, Michoacán, Mexico, on July 20, 1939, and is deposited in the herbarium of the University of California at Los Angeles.

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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

October, 1940

No. 13

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 25 cents; per volume, \$5.00 in advance



A NEW SPECIES OF CROTON FROM COLOMBIA

Leon Croizat

CROTON CUPREATUS Croiz., sp. nov.

Planta lignosa, frutex vel arbor, innovationibus furfuraceo-lepidotis, pube nulla. Foliis ovato-ellipticis, apice brevius acuminatis, basi levissime cordatis ad rotundatis, margine integris, supra dissite subargenteo-lepidotis, caeterum olivaceis, subtus lepidibus confertioribus nitore plumbeo, vel cupreo-rubiginosis, costa venisque rubiginosis, venis optime penninerviis ad 10-jugis, vix anastomosatis 8--9 cm. longis, 3--4 cm. latis; petiolo lepidoto, ad 6 cm. longo, glandulis 2 bacilliformibus apice dilatatis insignito. Cymis ad 15 cm. longis, utriusque sexus, floribus totis capitulatis, capitulis inferioribus 2-sexualibus, superioribus more generis masculis: flore foemineo pedicello crassiusculo ad 8 mm. longo fulto, confertissime furfuraceo-lepidoto, calyce ad 4 mm. lato, lepidoto, lobis triangularibus ad 2 mm. longis, petalis ligulatis vel ligulato-truncatis, vel ligulato-bicornutis, margine tanto puberulis; ovario toto aureo-lepidoto ca. 4 mm. magno, stylis 3, crassiusculis, apice bifidis, pro genere brevibus, nec ultra 1 mm. longis, patentibus neque convolutis: flore masculo pedicello tenuiori ad 5 mm. longo fulto, ca. 5 mm. lato, pallide lepidoto, petalis integerrimis, glabris, ovatis ad 1.5 mm. longis, lobis triangularibus ca. 1.5--2 mm. longis; staminibus ad 12.

Typus: COLOMBIA: sine loco, Quatrecasas 8667 in herb. Arnold Arboretum.

C. cupreatus is a very distinct species, with a type of indument reminiscent of that of C. punctatus Jacq., but altogether unlike this plant. I can not suggest at present the name of another American endemic which it approaches. It was collected and sent by Dr. J. Quatrecasas in August, 1940, without indication of precise locality.

ADDITIONAL VERBENACEOUS NOVELTIES

Harold N. Moldenke

STACHYTARPHETA INDICA f. MONSTROSA Moldenke, Prelim. List
Invalid Names 7, hyponym (1940), f. nov.

Haec forma a forma typica speciei recedit spicis multo-ramosis et floribus abortis.

This form differs from the typical form of the species in having its spikes modified into usually flowerless many-branched panicles, the individual branches of the panicle erect or ascending, very slender, 1--15 cm. long, issuing from the axils of the normal bractlets in the deep excavations of the normal rachis, or else even the normal rachis absent and replaced by a very slender one similar to the branches; bractlets numerous and often closely imbricate on the branches, subtending greatly aborted often long-pedicellate flowers or no flowers at all.

The type of this form was collected by George Thomson in Mysore or the Carnatic region of Madras, India, and is deposited in the herbarium of the Jardin Botanique Principal at Leningrad. This obviously abnormal and monstrous form has been found repeatedly in India and, more recently, in Sumatra. Wallich regarded it as an abnormal form of Bouchea hyderobadensis Walp. [= Svensonia hyderobadensis (Walp.) Moldenke] and others have thought that it may represent a bigeneric cross between Stachytarpheta indica (L.) Vahl and Svensonia hyderobadensis [cfr. Moldenke in Fedde, Rept. 41: 132. 1936].

LANTANA LANGLASSEI Moldenke, sp. nov.

Frutex; ramulis gracillimis acutiuscule tetragonis sparse strigillosis; foliis oppositis; petiolis gracillimis sparse strigillosis; laminis submembranaceis lanceolatis attenuatis subacuminatis, ad basin abrupte acutis vel breviter acuminate, regulariter serratis, supra sparse albedo-strigillosis, subtus glabratis densiuscule nigro-punctatis.

Low shrub; branchlets extremely slender, rather acutely tetragonal, sparsely strigillose with appressed albidous hairs; leaves decussate-opposite; petioles very slender, 3--5 mm. long, sparsely strigillose; blades submembranous, lanceolate, 4--8 cm. long, 1.8--3.5 cm. wide, attenuate to a subacuminate point at the apex, abruptly acute or short-acuminate at base, regularly serrate from the widest part to the apex with greatly appressed bluntish teeth, sparsely albidous-strigillose above, glabrate but rather densely black-punctate beneath; inflorescence axillary, 1--1.8 cm. long; peduncles very slender, 5--12 mm. long, strigose; heads about 5 mm. long and 13 mm. in diameter; flowers white.

The type of this species was collected by Eugene Langlasse (no. 286) -- in whose honor it is named -- at Pantla, at an altitude of about 50 m., Guerrero, Mexico, on August 18, 1898, and is deposited in the Delessert Herbarium of the Conservatoire et Jardin Botaniques at Geneva. It is closely related to L. hispida H.B.K.

STACHYTARPHETA LUNDELLAE Moldenke, sp. nov.

Herba perennis, ad basin lignosa; ramis gracilibus obtuse tetragonis dense breviterque hirsutulo-pubescentibus; foliis oppositis; petiolis alatis dense patento-pubescentibus; laminis firme chartaceis obovato-subspathulatis, ad apicem rotundatis vel obtusis, ad basin longe acuminatis, regulariter serratis, supra dense substrigoso-pubescentibus, subtus densissime velutinosi; inflorescentiis terminalibus spicatis ubique dense puberulis gracilibus.

Perennial herb, woody at base; stems light-gray, glabrescent; branches slender, obtusely tetragonal, densely short-pubescent with spreading hirsutulous sordid hairs; nodes not plainly annulate; principal internodes 3--8 cm. long; leaves decussate-opposite; petioles not very distinct, winged, 5--10 mm. long, densely hirsutulous-pubescent; blades firmly chartaceous, uniformly gray-green on both surfaces, obovate-spatulate, 4--8 cm. long, 1.8--3 cm. wide, obtuse or rounded at apex, regularly serrate from the apex to the base of the expanded portion, very long-acuminate at base and indistinguishably attenuate into the petiole, densely substrigose-pubescent above, very densely velutinous beneath; midrib slender, plane above, prominent beneath; secondaries slender, 4--6 per side, ascending, not much arcuate, plane above, prominulous beneath; veinlet reticulation indiscernible above, usually obscure beneath; inflorescence spicate, terminal, 17--23 cm. long, densely many-flowered, densely puberulent throughout; rachis slender, deeply excavated, densely puberulent; bractlets lanceolate, 7--8 mm. long, long-attenuate at apex, uniformly puberulent throughout; corolla cerise-red, purplish in the throat, its tube about 10 mm. long, its limb 6--7 mm. in diameter.

The type of this showy species was collected by Cyrus Longworth Lundell and Amelia A. Lundell (no. 7412) -- in whose honor it is named -- along a roadside at Chichen Itza, Yucatán, Mexico, in June or July, 1938, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is related to S. purpurea Greenm., from which it may be distinguished at once by its larger bractlets, which are uniformly puberulent, instead of being merely ciliate-margined.

STACHYTARPHETA MEXICANA Moldenke, sp. nov.

Frutex; ramis obtuse tetragonis vel subteretibus dense albido-pubescentibus; foliis oppositis; petiolis gracilibus marginatis dense albido-pubescentibus, ad basin amplexicaulibus; laminis membranaceis rhomboideo-ellipticis vel rare lanceolato-ovatis acutis vel acuminatis serratis, ad basin longe cuneatis, supra scabrellis et sparse pilosis, subtus canescento-pubescentibus; spicis dense canescento-pubescent-

ibus; rhachide leviter excavato.

Shrub, about 1 m. tall; branches obtusely 4-angled or subterete, brown, densely white-pubescent with short and more or less spreading hairs; upper internodes 5.5--7.5 cm. long; nodes more or less annulate; leaves decussate-opposite; petioles slender, 1--1.5 cm. long, not distinct, margined, clasping at base, densely white-pubescent; blades membranous, lighter beneath, rhomboid-elliptic or rarely lanceolate-ovate, 7--14 cm. long, 2--5.5 cm. wide, acute or acuminate at apex, long-cuneate at base into the winged petiole, coarsely serrate along the margins except on the lower $1/3$ or $1/2$, scabrellous and sparsely pilose above, canescent-pubescent beneath with very short spreading hairs; midrib slender, mostly flat and not prominent on either surface; secondaries very slender, 4--6 per side, ascending at an acute angle, mostly not very arcuate, plane above, very obscurely prominulous beneath; spikes terminal, 15--25 cm. long, slender, densely canescent-pubescent throughout with short spreading hairs, densely flowered, the flowers overlapping except at the base of the spike, closely appressed into shallow excavations in the rachis, the spikes floriferous to the base or with a peduncle 1--2 cm. long; bractlets large and conspicuous, ovate-lanceolate, 11--15 mm. long, about 2 mm. wide at base, long-acuminate and subulate at apex, densely short-pubescent; corolla blue.

The type of this species was collected by George B. Hinton (no. 4504) in an oak woods at Luvianos, district of Temascaltepec, Mexico, Mexico, on August 10, 1933, and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

DURANTA REPENS var. *CANESCENS* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit rhachidibus pedicellisue calycibusque densissime incano-strigosis et calycibus plerumque longioribus angustioribusque.

This variety differs from the typical form of the species in having the rachis of its racemes and its calyxes very densely white-strigose, the pedicels very densely short-pubescent with canescent spreading hairs, and the calyx in anthesis somewhat longer and narrower, usually 4--4.5 mm. long and 1--1.5 mm. wide.

The type was collected by Ellsworth Paine Killip and Albert Charles Smith (no. 14990) at an altitude of 1000--1500 m. on the northern slope of the Mesa de los Santos, Santander Sur, Colombia, between December 11 and 15, 1926, and is deposited in the herbarium of the Field Museum of Natural History at Chicago. It is known also from Margarita Island and Lara, Venezuela. The corolla is purple, white at center.

STACHYTARPHETA MUTABILIS var. *VIOLACEA* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit spicis 5 mm. in diametro et corollis violaceis vel caeruleis vel purpureis.

This variety differs from the typical form of the species in its spikes being more slender, averaging about 5 mm. in diameter (excluding the corollas) instead of 10 mm., and the corollas being blue, violet, or purple in color.

The type was collected by Alexander Frank Skutch (no. 4224) in a clearing, as an escape from cultivation, at an altitude of 1035 m., in the vicinity of El General, San José, Costa Rica, in February, 1939, and is deposited in the Britton Herbarium at the New York Botanical Garden. The variety is known also from Cartago and from Guerrero, Mexico. It is said to be a shrub, sometimes 7 or 8 feet tall, used a great deal in Costa Rica as a fence and in gardens, where it is a favorite of hummingbirds.

STACHYTARHETA TABASCANA Moldenke, sp. nov.

Fruticulus; ramulis gracillimis glaberrimis pernitidis valde tetragonis; foliis oppositis; petiolis indistinctis marginatis glaberrimis; laminis submembranaceis ellipticis vel oblanceolatis abrupte acutis serratis, ad basin longe acuminate, utrinque glaberrimis; spicis gracillimis abbreviatis ubique glaberrimis.

Shrubby; branches and branchlets very slender, light-gray or almost white, conspicuously tetragonal, often with margined angles on the larger parts, perfectly glabrous, shiny; nodes annulate; principal internodes 1--5.5 cm. long; leaves decussate-opposite; petioles indistinct, perhaps about 5 mm. long, winged-margined, glabrous; blades submembranous, rather uniformly dark-green on both surfaces or slightly lighter beneath, elliptic or oblanceolate, 4--8 cm. long, 1.4--3 cm. wide, abruptly acute at apex, regularly and often somewhat coarsely serrate from almost the base of the expanded portion to the apex with rather broadly triangular sharply acute or apiculate somewhat spreading teeth, long-acuminate and attenuate into the petiole at base, perfectly glabrous on both surfaces; midrib slender, plane above, prominent beneath; secondaries very slender, 4 or 5 per side, arcuate-ascending, short, usually obscure above, subprominent beneath; vein and veinlet reticulation obscure or indiscernible on both surfaces; inflorescence terminal, spicate; spikes abbreviated, about 12 cm. long, very slender; rachis glabrous, excavated; bractlets lanceolate, 3--3.5 mm. long, attenuate at apex, glabrous; flowers very small.

The type of this species was collected by Eizi Matuda (no. 3218) at Reforma, Balancán, Tabasco, Mexico, between May 22 and 26, 1939, and is deposited in the Britton Herbarium at the New York Botanical Garden.

STACHYTARPHETA VELUTINA Moldenke, sp. nov.

Frutex; ramulis obtuse tetragonis dense brevissimeque pubescentibus; foliis oppositis vel approximatis sessilibus; laminis chartaceis anguste ellipticis acutis vel acuminatis irregulariter serratis, ad basin cuneatis, supra densiuscule piloso-pubescentibus, subtus densissime velutinis; spicis percrassis dense multifloris ubique dense hirtello-pubescentibus; rhachide valde excavato.

Shrub, about 2 m. tall; branchlets very obtusely tetragonal, gray-brown, very slightly 4-margined, densely pubescent with very short gray-brown hairs; principal internodes 2--4 cm. long; nodes not annulate; leaves decussate-opposite or approximate, the members of a pair sometimes separated by intervals of 2--15 mm.; petioles obsolete; blades chartaceous, dark-green above, somewhat lighter beneath, narrow-elliptic, 5.5--11 cm. long, 1.5--3.5 cm. wide, acute or acuminate at apex, irregularly serrate along the margins except at the base, cuneate at base, rather abundantly pilose-pubescent above with spreading hairs of various lengths, very densely velutinous beneath; spikes terminal, 20--32 cm. long, very stout and heavy, densely flowered almost to the base, the flowers closely appressed in deep excavations in the incrassate rachis, almost overlapping, densely hirtellous-pubescent throughout; bractlets lanceolate-ovate, 7--10 mm. long, about 2 mm. wide at base, sharply acute or acuminate at apex, divaricate in anthesis, later appressed; style and stigmas persistent long after the corollas have dropped off.

The type of this species was collected by George B. Hinton (no. 1801) by the river, at an altitude of about 1080 m., Vigas, district of Temascaltepec, México, Mexico, on September 22, 1932, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species is also known from Michoacán.

VERBENA HARBISONII Moldenke, sp. nov.

Herba; ramis acutiuscule tetragonis dense canescento-hirtellis; nodis valde annulatis; foliis oppositis; petiolis alatis dense canescento-hirtellis; laminis chartaceis profunde 3-partitis hirsutulo-pubescentibus, lobis lanceolatis argute acutis subrevolutis; inflorescentiis spicatis longe pedunculatis; spicis oblongis densissime multifloris.

Herb; stems erect, slender, rather acutely tetragonal, ridged, rather densely hirsutulous-pubescent with short, divergent, canescent hair; branches similar but usually more densely canescent-hirsutulous, ascending, short; nodes on stems usually elongate, 4--8 cm. long, more abbreviated on branches, plainly annulate; leaves decussate-opposite; petioles 3--10 mm. long, winged-margined, densely hirsutulous-

pubescent with canescent hair; blades chartaceous, uniformly green on both surfaces, 2--5.5 cm. long, 2--5 cm. wide, the larger ones deeply 3-parted (practically to the base), the divisions lanceolate in outline, deeply and irregularly pinatisect, all the lobes sharply acute at apex, the margins slightly revolute, the lateral divisions widely divergent, the uppermost leaves much reduced, with linear divisions, all hirsutulous-pubescent above and on the venation beneath; venation slightly impressed above, prominent beneath; inflorescence spicate, rather long-pedunculate, terminating the upper branchlets; peduncles slender, acutely tetragonal, densely canescent-hirsutulous, 2--5.5 cm. long; spikes oblong, 1--2.5 cm. long, about 1.5 cm. wide, very densely many-flowered; bractlets lanceolate, equaling the calyx, 5--6 mm. long, about 1 mm. wide at base, long-attenuate to a setaceous apex, densely hirsutulous with short hairs; calyx membranous, cylindric, its tube about 5 mm. long, 0.9 mm. wide at base and 2.2 mm. at apex, densely short-pubescent with spreading white hairs, its rim 5-lobed, the lobes about 2.5 mm. long, setulose, densely pubescent; corolla hypocrateriform, glabrous outside, its tube about 6.8 mm. long, its limb about 5 mm. in diameter, the lobes small, about 2 mm. long and wide, rounded and bifid at apex; stamens 4, didynamous, inserted about 2.4 and 3.4 mm. below the mouth of the corolla-tube, included; filaments filiform, very short, 0.2--0.4 mm. long; anthers about 0.9 mm. long and 0.7 mm. wide, unappendaged; style capillary, about 4.9 mm. long, glabrous; ovary oblong, about 1.4 mm. long and 0.7 mm. wide, glabrous.

The type of this species was collected by Charles F. Harbison -- in whose honor it is named -- at Agua del Refugio, Baja California, Mexico, on April 1, 1935, and is deposited in the herbarium of the San Diego Society of Natural History at San Diego, California. The species is quite distinct from all known species of this region. Its most obvious characters are its long-pedunculate densely-flowered oblong spikes, elongate setaceous bractlets, and deeply 3-parted leaves whose lobes are all plainly acute at the apex.

VERBENA HINTONI Moldenke, sp. nov.

Herba; ramis gracillimis acute tetragonis plusminus hirsutulis; nodis annulatis; foliis oppositis; petiolis brevissimis vel obsoletis; laminis lanceolatis vel ellipticis, ad apicem acutis, ad basin cuneatis, marginibus crasse paucidentatis vel 3-laciniatis vel sublobatis utrinque plusminus hirsutulis; inflorescentiis spicatis elongatis gracilibus.

Herb, to 1 m. tall; stems and branches very slender, brownish, acutely tetragonal, more or less short-hirsutulous; nodes annulate; principal internodes 1.5--6 cm. long; leaves opposite, the upper ones sessile or subsessile; peti-

oles very short and obscure or obsolete; blades thin-chartaceous, uniformly green on both surfaces, narrowly lanceolate or elliptic in outline, the upper ones 1.5--2 cm. long, 2--11 mm. wide, acute at apex, cuneate at base, coarsely few-dentate along the margins or 3-laciniate or 3-lobed below the middle, more or less short-hirsutulous on both surfaces, especially on the venation beneath; midrib and the 1 or 2 secondaries very slender, impressed above, prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence axillary and terminal, spicate, elongate, to 23 cm. long, many-flowered, the flowers densely imbricate before and during anthesis, loosely scattered in fruit; rachis very slender, sparsely pilosulous; peduncles obsolete or extremely short; bractlets lanceolate, 1.5--2 mm. long, acuminate, ciliate; calyx 2.5--3 mm. long, strigillose; corolla light-purple, about 7 mm. long, its limb about 4 mm. in diameter.

The type of this species was collected by George B. Hinton (no. 11991) -- in whose honor it is named -- on a grassy bank at Zitacuaro-Bosque, district of Zitacuaro, Michoacán, Mexico, on June 28, 1938, and is deposited in the Britton Herbarium at the New York Botanical Garden.

VITEX QUINATA var. WITTROCKIANA Moldenke, Geogr. Distrib. 40, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit ramulis samentisque pedunculisque rhachideque pedicellisque petiolisque calyceque ubique glabris; inflorescentiis parvioribus saepe non-brachiatis; cymis longe stipitatis divaricatifurcatis, ramulis longis gracillimis; pedicellis elongatis filiformibus.

This variety differs from the typical form of the species in its smaller inflorescences, which are only 10--12 cm. long, less thyrsoïd, often not branched, with few-flowered and very lax cymes which are long-stipitate and divaricatifurcate with long and very slender branches, and elongate filiform pedicels 3--5 mm. long; the branchlets, twigs, peduncles, rachis, cyme-branches, pedicels, petioles, and calyx glabrous throughout; and the flowers larger.

The type was collected by Benedict Balansa (no. 3815) in cultivation at Tonkin, French Indo-china, in May, 1887, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. It is also known from cultivation in Hongkong.

ALOYSIA DUSENII Moldenke, sp. nov.

Frutex; ramulis gracillimis leviter adpresso-puberulis; foliis oppositis; petiolis gracillimis; laminis chartaceis anguste ellipticis acutis vel subapiculatis integris vel paucidentatis, ad basin acutis, utrinque levissime adpresso-

puberulis, in senectute supra pustulato-asprellis scabris; inflorescentiis spicatis; spicis dense multifloris nutantibus.

Bushy; branchlets very slender, finely appressed-puberulent, twiggy; leaves decussate-opposite; petioles very slender, 1--3 mm. long, finely appressed-puberulent; blades thin-chartaceous, narrow-elliptic, 1.8--5 cm. long, 7--14 mm. wide, acute and often subapiculate at apex, entire or with 1 or 2 small teeth on each margin near the apex, acute at base, very finely appressed-puberulent on both surfaces, becoming pustulate-asprellous and roughened above in age; inflorescence spike-like; spikes to 9 cm. long, 6--9 mm. wide, densely many-flowered, nutant; peduncles elongate, very slender, to 3 cm. long, densely appressed-puberulent; calyx about 2 mm. long, hirsute; corolla about 5 mm. long, its limb about 4 mm. in diameter.

The type of this species was collected by Per Karl Hjalmar Dusén (no. 1050a) on a shrubby campo at Tamandaré, Paraná, Brazil, on October 4, 1914, and is deposited in the herbarium of the Botanisches Museum at Berlin.

ALOYSIA VIRGATA var. *ELLIPTICA* (Briq.) Moldenke, comb. nov.

Lippia virgata var. *elliptica* Briq., Ann. Conserv. Jard. Bot. Genève. 7--8:304. 1904.

GITHAREXYLUM KOBUSKIANUM Moldenke, Geogr. Distrib. 23, nom. nud. (1939), sp. nov.

Arbor; ramis mediocriter gracilibus glabris; hornotinis gracillimis minute puberulis; nodis ampliatis; cicatricibus elevatis suberosis; foliis oppositis; petiolis gracillimis minute puberulis; laminis chartaceis oblongis vel oblongo-ellipticis acutis brevissime apiculatis integris, ad basin acutis vel breviter acuminatis, supra sparsissime puberulis, subtus dense puberulis; inflorescentiis axillaribus racemiformibus; calyx puberulo.

Tree; branches medium-slender, grayish, glabrous; youngest twigs very slender, brownish, minutely puberulent; nodes somewhat ampliate; principal internodes 1--4 cm. long; older leaf-scars large, prominent, corky; leaves opposite; petioles very slender, 2--5 mm. long, minutely puberulent; blades chartaceous, uniformly dull-green on both surfaces, oblong or oblong-elliptic, 2.5--5 cm. long, 1.5--2.2 cm. wide, acute and very shortly apiculate at apex, entire, acutely or shortly acuminate at base, very sparsely puberulent above, densely puberulent beneath; midrib slender, subimpressed and densely puberulous above, prominulous beneath; secondaries slender, 7--10 per side, slightly arcuate-ascending, obscure above, slightly prominulous beneath; veinlet reticulation indiscernible above, very slightly prominulous beneath; in-

florescence axillary, racemiform, to 6.5 cm. long, many-flowered; rachis slender, puberulent; fruiting-calyx very light and herbaceous, puberulent outside; fruiting-pedicels about 3 mm. long, brownish-puberulent; fruit subglobose or oblong, about 5 mm. long and 4 mm. wide, fleshy, glabrous.

The type of this species was collected by Jelski (A. Raimondi 6303) at Chota, Chichayro, Cajamarca, Peru, on September 10, 1877, and is deposited in the herbarium of the Botanisches Museum at Berlin. The species is named in honor of my good friend and colleague, Dr. Clarence Emmeren Kobuski, of the Arnold Arboretum, who has produced an excellent monograph of the genus Priva.

CITHAREXYLUM PERNAMBUCENSE Moldenke, Alph. List Common Names 26, nom. nud. (1939); Geogr. Distrib. 25, nom. nud. (1939), sp. nov.

Arbor; ramis griseis glabratibus; ramulis subteretibus minute puberulentibus glabrescentibus; foliis oppositis vel suboppositis; petiolis gracillimis minute puberulentibus; foliis tenuiter chartaceis subovatis vel oblongis vel obovatis acutis vel obtusis integris, ad basin acuminatis, supra minutissime obscureque puberulis vel strigillosis glabrescentibus, subtus dense velutino-pubescentibus; inflorescentiis terminalibus axillaribusque erectis multifloris, floribus pseudo-subsecundis.

Tree; branches gray, glabrate; branchlets brown, subterete, minutely puberulent, glabrescent in age; nodes not annulate; principal internodes 2.7--5.4 cm. long; leaves decussate-opposite or subopposite; petioles very slender, 9--15 mm long, brown, minutely puberulent, conspicuously canaliculate above; blades thin-chartaceous, rather shiny above, subovate or oblong to obovate, 8.8--12 cm. long, 5.3--7 cm. wide, acute or obtuse at apex, entire, acuminate at base and bearing two elongate glands along the midrib beneath, very minutely and obscurely puberulent or strigillose above, glabrescent in age, densely velutinous-pubescent beneath; midrib slender, practically flat above, prominent beneath; secondaries slender, 5--7 per side, arcuate-ascending, not plainly anastomosing, prominulous beneath; racemes terminal and axillary, erect, to 23 cm. long, about 2.5 cm. wide, many-flowered, the flowers pseudo-subsecund; peduncles 1.5--6.5 cm. long, slender, densely puberulent; rachis slender, densely puberulent; pedicels to 1 mm. long, densely puberulent; calyx about 5 mm. long and 4 mm. wide, puberulent; corollatube 15--17 mm. long, its limb about 10 mm. in diameter.

The type of this species was collected by my good friend, Don Bento Pickel (no. 1501) at Caruarú, Tapera, Pernambuco, Brazil, in January, 1928, and is deposited in the herbarium of the Botanisches Museum at Berlin.

CITHAREXYLUM RIMBACHII Moldenke, sp. nov.

Arbor; ramis ramulisque percrassis fistulosis valde tetragonis pulverulento-puberulis; nodis valde annulatis; petiolis percrassis puberulis; laminis magnis coriaceis ovatis acutis integris, ad basin subtruncatis, supra glabris, subtus dense adpresso tomentosis; inflorescentiis axillaribus spicatis dense multifloris.

Middle-sized forest tree, with broad crown and thick rather smooth bark exfoliating in longitudinal strips; branches and branchlets very stout and robust, hollow, brown, decidedly tetragonal, much flattened at the nodes, pulverulent-puberulent, usually decidedly corky-margined below the nodes; nodes annulate, the annulation deeply U-shaped (at least on one side); leaves opposite; petioles very stout, 3.5--4 cm. long, flattened above, ridged in drying, amplate at base, puberulent; blades very large, coriaceous, oval or ovate, 25--30 cm. long, 15--19 cm. wide, dark-green above, somewhat lighter beneath, acute at apex, entire, subtruncate at base (rarely abruptly acute), glabrous above, densely appressed-tomentose beneath with yellowish many-branched hairs; midrib very stout, slightly impressed above, very prominent and merely puberulent beneath; secondaries strong, 11--16 per side, arcuate-ascending, very slightly impressed above, very prominent beneath with the pubescence wearing off from the most elevated portions; vein and veinlet reticulation abundant, only the coarsest portions prominent beneath, only the finest portions visible above (!); inflorescence axillary, spicate; spikes opposite, solitary, 13--21 cm. long, about 2 cm. wide in anthesis, densely many-flowered; peduncles stout, 2.5--3 cm. long, densely furfuraceous-tomentose with cinereous hairs, angulate in drying; rachis stout (stouter than the peduncle), more densely cinereous-tomentose with longer hairs than the peduncles; bracts and bractlets none; prophylla conspicuous (especially when the calyxes have dropped off), reflexed, 1.5--2 mm. long, densely tomentose, linear-subulate; pedicels none; calyx in anthesis very large and heavy, more or less inflated, 5.5--7 mm. long, tubular or broadly cupuliform or urceolate, densely short-tomentose, often 5-costate with darker or less pubescent lines, its rim 5-toothed, the teeth broadly triangular, about 1 mm. long, acute; immature fruiting-calyx decidedly urceolate, almost enclosing the fruit, very decidedly inflated, with the 5 dark ribs very conspicuous; immature fruit globose.

The type of this species was collected by Dr. August Rimbach (no. 374) -- in whose honor it is named -- in the forest region between the Chimbo river and the village of Balsapampa in the Western Cordillera, at an altitude of 2500 m., Ecuador, in December, 1934, and is deposited in the herbar-

ium of the Naturhistoriska Riksmuseet at Stockholm.

CLERODENDRUM ACULEATUM var. *GUIANENSE* Moldenke, Geogr. Distrib. 22, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit margine calycis tantum breviter dentato, dentibus triangulari-ovatis 0.7--1 mm. longis acutis nec acuminatis nec caudatis nec patento-reflexis.

This variety differs from the typical form of the species in its calyx-rim being only short-toothed, the teeth triangular-ovate, 0.7--1 mm. long, acute, not at all acuminate or caudate or spreading-reflexed.

The type was collected by Jean Baptiste Leblond (no. 282) in French Guiana in 1792, and is deposited in the Delessert Herbarium of the Conservatoire Botanique at Geneva.

CLERODENDRUM DUCKEI Moldenke, Geogr. Distrib. 26, nom. nud. (1939), sp. nov.

Frutex; ramulis gracilibus obtuse tetragonis plusminus puberulis vel subglabrescentibus; sarmentis gracilibus brevibus dense flavo-tomentosis; foliis ternatis; petiolis gracillimis 5--8 mm. longis dense breviterque pubescentibus; laminis ellipticis vel elliptico-ovatis acutis vel breviter acuminatis integris, ad basin acutis vel acuminatis, supra pulverulento-puberulis vel glabrescentibus, subtus plusminus pulverulento-puberulis et punctatis; inflorescentiis axillaribus terminalibusque abbreviatis confertis, cymis paucifloris; pedunculis pedicellisque gracillimis dense pubescentibus.

Shrub; branchlets slender, obtusely tetragonal, grayish, more or less puberulent or becoming subglabrate in age; twigs slender, short, subterete or obscurely tetragonal, densely pubescent with tomentose yellowish hairs; nodes not annulate, marked with 3 prominent and divaricate corky stigmata 1--2 mm. long; principal internodes much abbreviated, 5--32 mm. long or much less; leaves ternate (or the lowermost on a twig only approximate); petioles very slender, 5--8 mm. long, densely short-pubescent; blades thin-chartaceous, dark-green (nigrescent in drying) above, lighter (brunnescent in drying) beneath, elliptic or elliptic-ovate, 2--5.6 cm. long, 1--3.2 cm. wide, acute or short-acuminate at apex, entire, acute or acuminate at base, pulverulent-puberulent above, becoming glabrate, more or less pulverulent-puberulent and punctate beneath; midrib very slender, subimpressed above, prominulous beneath; secondaries very slender, 5--7 oer side, arcuate-ascending, often short and not very arcuate, obscure or indiscernible above, flat or very slightly prominulous beneath; vein and veinlet reticulation sparse, indiscernible above, very inconspicuous or obscure beneath;

inflorescence axillary in the uppermost axils and terminal, abbreviated, congested, the cymes few-flowered, to 2.5 cm. long; peduncles very slender, 5--8 mm. long, densely pubescent; sympodia and inflorescence-branches obsolete or much abbreviated and densely pubescent; pedicels very slender, 1-2 mm. long, densely pubescent; bracts 1 or more pairs, subtending the larger cymes of the terminal inflorescence, sessile, oblanceolate-spatulate or oblong, densely yellowish or cinereous-pubescent, 3--8 mm. long; bractlets and prophylla linear-subulate or setaceous, 1--2 mm. long, densely pubescent; calyx about 3 mm. long and 2 mm. wide, appressed-puberulent; corolla-tube about 15 mm. long, its limb 9--10 mm. in diameter.

The type of this species was collected by Adolfo Ducke (no. 9924) -- in whose honor it is named -- at Igarapé do Ereré, Monte Alegre, Pará, Brazil, on December 14, 1908, and is deposited in the Delessert Herbarium of the Conservatoire Botanique at Geneva.

CLERODENDRUM EKMANI Moldenke, Geogr. Distrib. 29, nom. nud. (1939); Prelim. Alph. List Invalid Names 32, hyponym (1940), sp. nov.

Fruticulus; ramulis gracilibus obtuse tetragonis densissime villosa-tomentosis; petiolis gracilibus dense hirsutis; laminis ovatis vel ovato-ellipticis obtusis vel rotundatis regulariter serratis, ad basin subcordatis vel rotundatis vel acutis, utrinque dense villosis; inflorescentiis axillaribus cymosis; corollis valde elongatis.

Low bush; branchlets slender, obtusely tetragonal, very densely villous-tomentose with long albidous hairs; nodes not annulate; principal internodes 1--3 cm. long; leaf-scars not conspicuous; leaves decussate-opposite; petioles slender, 5--17 mm. long, densely hirsute with long whitish hairs, flattened above, not noticeably annulate at base; blades membranous, rather uniformly dark-green on both surfaces, ovate or ovate-elliptic, 3.3--5.8 cm. long, 1.5--4 cm. wide, obtuse or rounded at apex (in outline), varying from subcordate to rounded or acute at base, usually somewhat prolonged into the petiole, regularly serrate from base to apex with acute or bluntish antrorse teeth of uniform size throughout, densely villous on both surfaces with whitish hairs 1--1.5 mm. long, especially dense on young leaves and on the larger venation beneath; midrib slender, plane above, prominulous beneath; secondaries very slender, 4--6 per side, arcuate-ascending, mostly plane on both surfaces; vein and veinlet reticulation obscure or indiscernible on both surfaces, hidden by the dense pubescence; inflorescence axillary, cymose; peduncles very slender, about 1 cm. long, hirsute like the petioles; corolla-tube to 9 cm. long.

The type of this remarkable species was collected by H. Quiroga at San Ignacio, Misiones, Argentina, on October 21, 1913, and is deposited in the Delessert Herbarium of the Conservatoire Botanique at Geneva. It is named in honor of Erik Leonard Ekman, who also collected it and who considered it to represent a new genus of Verbenaceae.

CLERODENDRUM MARGARITENSE Moldenke, Geogr. Distrib. 20, nom. nud. (1939), sp. nov.

Frutex; ramulis sarmentisque subgracilibus obtuse tetragonis brunneis dense breviterque pubescentibus vel tantum puberulis; internodiis abbreviatis; foliis ternatis; petiolis gracillimis dense breviterque pubescentibus; laminis chartaceis ellipticis acutis vel brevissime subacuminatis integris (plerumque plusminus revolutis), ad basin acutis vel subacuminatis, supra densiuscule subtus densissime breviterque pubescentibus et punctatis, pilis flavidis; inflorescentiis axillaribus, ad apicem sarmentorum confertis; cymis abbreviatis ternatis laxiuscule multifloris ubique densissime breviterque pubescentibus; pedunculis pedicellisque gracilibus.

Shrub; branchlets and twigs rather slender, obtusely tetragonal, brownish, densely short-pubescent or merely puberulent in age; younger nodes seemingly annulate through the confluence or persistent petiole-base margins, older nodes not annulate; principal internodes 1--21 mm. long, usually extremely abbreviated on young twigs or even subobsolete; leaves ternate or ternate-approximate; petioles very slender, 1--7 mm. long, densely short-pubescent, its base persisting as a stout corky and non-aculeate spur-like projection 1--2 mm. long after the blade is shed, in whose axil may often be found a bluntish or sharp spine 3--4 mm. long, which is the lowest part of the peduncle left when the remainder broke off; blades chartaceous, dark gray-green above, bright-green or yellow-green beneath, elliptic, 1--4.5 cm. long, 6--12 mm. wide, acute or very shortly subacuminate at apex, entire (and often more or less revolute in drying) along the margins, acute or subacuminate at base, rather densely short-pubescent above, much more densely so beneath with yellowish brown hairs and densely punctate; midrib very slender, impressed above, prominulous beneath; secondaries very slender, 3--7 on each side, arcuate-ascending, obscure or indiscernible above, slightly prominulous or obscure beneath; vein and veinlet reticulation very delicate, impressed or obscure above, not at all prominulous and often even obscure beneath; inflorescence axillary, congested at the terminations of the twigs so as to appear terminal; cymes abbreviated, ternate, solitary, 1.5--3 cm. long, 0.6--2 cm. wide, rather loosely many-flowered, very densely short-pubescent

(like the lower leaf-surfaces) throughout; peduncles slender and 6--10 mm. long, pubescent; pedicels slender, 2--4 mm. long, pubescent; bractlets linear-subulate, 2--5 mm. long, densely pubescent; prophylla minute, setaceous; calyx about 3 mm. long and wide, appressed short-pubescent; corolla-tube 7--10 mm. long, its limb about 7 mm. in diameter.

The type of this species was collected by John Robert Johnston (no. 82) en route from El Valle to Asuncion, Margarita Island, Venezuela, in August, 1903, and is deposited in the United States National Herbarium at Washington. It has hitherto been confused with the continental C. molle H.B.K.

CLERODENDRUM RUSBYI Moldenke, Geogr. Distrib. 26, nom. nud. (1939), sp. nov.

Frutex vel arbor; ramulis gracilibus obtuse tetragonis; nodis non annulatis; petiolis gracillimis glabris, in sterigmatibus magnis prominentibus suberosis non aculeiferis orientibus; laminis membranaceis ellipticis acutis vel breviter acuminatis integris, ad basin acutis, ut videtur glabris; inflorescentiis axillaribus 3-floris laxis; pedunculo pedicellisue gracilibus glabratis; calyce campanulato crasso glabro, margine 5-apiculato vel breviter 5-dentato; corolla hypocrateriformi glabra, tubo elongato gracillimo.

Shrub or tree; branchlets slender, obtusely tetragonal, more or less 4-sulcate, gray; nodes not annulate; leaves decussate-opposite; petioles very slender, about 5 mm. long, glabrous, borne on very large and prominent corky sterigmata about 1 mm. long and 2.2 mm. in diameter, not aculeiferous; blades membranous, elliptic, dark-green and glabrous above (lower surface not seen), about 5.4 cm. long and 2.7 cm. wide, acute or very short-acuminate at apex, entire, acute at base; midrib very slender; secondaries very slender, about 6 per side, ascending, not much arcuate, very slightly prominulous above; inflorescence axillary, 3-flowered, opposite in the uppermost axils, lax; peduncle slender, 1.7--2 cm. long, glabrate; pedicels slender, 5--7 mm. long, glabrous; calyx campanulate, heavy, 3.5--5 mm. long, 4--6 mm. wide, glabrous, the rim 5-apiculate or shortly 5-toothed; corolla hypocrateriform, glabrous, its tube very slender, 2--2.7 cm. long, 1 mm. wide for $\frac{3}{4}$ its length, ampliate to 3 mm. below the limb, the limb spreading or reflexed, 5-parted; stamens long-exserted; filaments filiform, exserted 2--2.5 cm. from the corolla-tube, glabrous; anthers oblong, about 2 mm. long and 1 mm. wide, 2-celled.

The type of this species was collected by Henry Hurd Rusby (no. 2572) -- in whose honor it is named -- at the falls of the Madeira River, Brazil, in October, 1886, and is deposited in the Columbia University herbarium at the New York

Botanical Garden.

CLERODENDRUM TESSMANNI Moldenke, Geogr. Distrib. 23, nom. nud. (1939), sp. nov.

Frutex vel arbor; ramulis tetragonis crassis subglabris vel ad nodos complanatos plusminus strigillosis; internodiis elongatis; foliis oppositis vel saepe approximatis; petiolis crassiusculis vel crassis minute pulverulentis vel glabrat-
is, ad basin in juventute corrugatis in senectute valde in-
crassatis; laminis chartaceis ellipticis breviter acuminatis
integris, ad basin cuneatis, utrinque glabris; inflorescenti-
is axillaribus vel supra-axillaribus; cymis 2--7-floris;
pedunculis crassis stramineis vel purpureis glabrat-
is; pedicellis crassis glabrat-
is.

Shrub or tree; branchlets obtusely or acutely tetragonal, buff-colored, stout, often very much decussate-flattened and broadened at each node, subglabrate and shiny or more or less strigillose at and below the nodes and around the leaf-scars; nodes not annulate; principal internodes elongate, 3-6.5 cm. long; leaves decussate-opposite or often approximate with the 2 members of a pair separated by as much as 1.5 cm; petioles stoutish or very stout when mature, 7--20 mm. long, minutely pulverulent or glabrate, more or less corrugated at base when immature, much incrassate at base when mature, often deeply canaliculate above; blades chartaceous, rather uniformly bright-green on both surfaces, elliptic, 7--30.5 cm. long, 2.7--8 cm. wide, short-acuminate at apex, entire, cuneate at base, glabrous on both surfaces; midrib stout, flat above, very prominent beneath; secondaries very slender, 8--11 per side, arcuate-ascending, flat or subimpressed above, sharply prominulous beneath; vein and veinlet reticulation very slender, mostly obscure above, very slightly prominulous beneath; inflorescence axillary or supra-axillary; cymes solitary, ascending, opposite, 8--15 cm. long, 2-6 cm. wide, 2--7-flowered; peduncles stout, 4--9 cm. long, stramineous or purplish, glabrate; pedicels stout, 5--12 mm. long, glabrate, erect or ascending, not divaricate; bracts none; bractlets few, narrowly spatulate, to 1.2 cm. long, glabrate, often curvate, stipitate; prophylla linear-subulate, to 3 mm. long; calyx thick-textured, campanulate-elongate, about 10 mm. long, 8 mm. wide at apex; corolla-tube about 22 mm. long, its limb about 25 mm. in diameter.

The type of this species was collected by Günther Tessmann (no. 3244) -- in whose honor it is named -- in the rain forest of the Ucayali from 10° S. to its mouth, Loreto, Peru in 1923, and is Deposited in the Delessert Herbarium of the Conservatoire Botanique at Geneva. The species is also known from Ayacucho.



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PHYTOLOGIA

Designed to expedite botanical publication

Vol. 1

November, 1940

No. 14

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance

Vol. 1, No. 12, was issued October 2, 1940; Vol. 1, No. 13, was
issued October 8, 1940



NOTEWORTHY SPERMATOPHYTES FROM MEXICO & CENTRAL AMERICA (a)

C. L. Lundell

CROTON CHICHENENSIS Lundell, sp. nov.

Frutex, albido-tomentosus. Petioli 0.6--2 cm. longi. Lamina chartacea, minute serrulato-denticulata, lanceolato-oblonga vel ovato-lanceolata, apice acuta vel acuminata, mucronulata, basi subcordata, supra stellato-pilosa, subtus albido-tomentosa. Inflorescentiae unisexuales. Flores ♀ sessiles vel subsessiles; calyx 2--2.5 mm. longo, lobis triangularibus. Flores ♂ pedicellati; calyce 3 mm. longo; staminibus 18. Capsula stellato-tomentosa.

A shrub, 1 m. high, with amber colored sap, whitish or pale tawny tomentose with stellate hairs. Branchlets slender, angled. Stipules inconspicuous, subulate, up to 3 mm. long. Petioles 0.6 to 2 cm. long. Leaf blades chartaceous, minutely serrulate-denticulate, lanceolate-oblong or ovate-lanceolate, 3 to 8.5 cm. long, 1.1 to 3 cm. wide, apex acute or acuminate, mucronulate, base subcordate, finely stellate-pubescent above, whitish tomentose beneath, pinnately veined, costa and veins slightly impressed above, conspicuous beneath. Racemes unisexual, terminal, tomentose, the staminate up to 13 cm. long, the pistillate spicate, congested, up to 3 cm. long. Pistillate flowers sessile or subsessile; calyx 2 to 2.5 mm. long, 5-lobed, the lobes triangular or triangular-lanceolate, glabrous within; petals sometimes developed and resembling calyx lobes, sometimes vestigial; ovary stellate-tomentose; styles once-branched, practically glabrous on inner surfaces. Staminate flowers with pedicels up to 4 mm. long; calyx 3 mm. long, lobes ovate, glabrous within; petals oblanceolate-oblong, about 3 mm. long, ciliate, the hairs greatly elongated below middle, practically glabrous otherwise; stamens 18, filaments glabrous; receptacle pilose. Capsules tomentose.

Type in the University of Michigan Herbarium, C. L. Lundell and Amelia A. Lundell 7326, collected in low second growth around the Sacred Cenote, Chichén Itzá, Yucatán, Mexico, May 30, 1938.

Allied to C. Cortesianus H.B.K.

CROTON PSEUDONIVEUS Lundell, sp. nov.

Arbor lepidota. Petioli 0.7--2.3 cm. longi. Lamina membranacea, repanda, ovata, apice subacuminata, obtusa, basi rotundata vel subtruncata. Inflorescentiae bisexuales, fasciculatae, usque ad 1.2 cm. longae. Flores ♀ pedicellati; calyce ca. 3 mm. longo, lobis ovatis. Flores ♂ pedicellati;

staminibus 10 vel 11.

Tree, 6 m. high, lepidote throughout. Branchlets slender. Petioles 0.7 to 2.3 cm. long, slender. Leaf blades membranaceous, repand, ovate, 5 to 8.5 cm. long, 3.2 to 7 cm. wide, apex obtuse, base rounded or subtruncate, 3- or 5-veined, rather sparsely lepidote on both surfaces, the scales silvery with red center. Racemes bisexual, fasciculate in the leaf axils, crowded, very short, up to 1.2 cm. long, bracts villous-ciliate. Pistillate flowers with pedicels about 2 mm. long; calyx about 3 mm. long, lobes ovate; petals 5, broadly obovate, clawed, 3 mm. long, villous-ciliate; ovary lepidote; styles 3, branched 3 or 4 times. Staminate flowers with pedicels 1.5 mm. long; stamens 10 or 11, filaments glabrous.

Type in the University of Michigan Herbarium, Ynes Mexia 921, collected in thorny coast jungle, alt. 5 m., at Los Labrados, Sinaloa, Mexico, Oct. 14, 1926; vernacular names "vara blanca" and "mueltilla".

Closely related to C. niveus Jacq. with which it has been confused.

CROTON TACANENSIS Lundell, sp. nov.

Arbuscula videtur, farinoso-stellato-tomentosa. Petioli 3--8 cm. longi. Lamina membranacea, subserrulata, ovata, apice acuminata, basi subtruncate, emarginata. Inflorescentiae bisexuales. Flores ♀ pedicellati; calyce 3 mm. longo, lobis lanceolato-oblongis. Flores ♂ pedicellati; staminibus 13--16.

Apparently a small tree, with loose farinose yellowish tomentum of stellate hairs, the central ray of hairs elongated and acicular on branchlets, petioles, and inflorescence. Petioles 3 to 8 cm. long, with a pair of stalked glands at apex beneath. Leaf blades membranaceous, ovate, 7 to 13 cm. long, 3.5 to 8 cm. wide, apex acuminate, base subtruncate, shallowly emarginate, the tomentum dense and persistent beneath, at length nearly glabrous above, farinose, margin subserrulate, base 3-veined. Racemes terminal, up to 20 cm. long, lower bracts subtending both staminate and pistillate flowers. Pistillate flowers with pedicels up to 3.5 mm. long; calyx 3 mm. long, deeply 5-lobed, lobes lanceolate-oblong; ovary stellate-hispid; styles bifid to base. Staminate flowers with pedicels up to 3 mm. long; calyx 2.5 mm. long; petals 5, oblanceolate, about 2.5 mm. long, villous; stamens 13 to 16, filaments villous below middle, receptacle villous.

Type in the University of Michigan Herbarium, Eizi Matuda 2943, collected at an altitude of 2100 m. on the north side of Volcán de Tacaná, Chiapas, Mexico, on April 2, 1939.

The species is a member of the complex of Croton gossypifolius Vahl.

CROTON TENUICAUDATUS Lundell, sp. nov.

Arbor, 18 m. alta, lepidota et hirtella. Fetioli usque ad 4.3 cm. longi. Lamina membranacea, integra, ovato-oblonga vel elliptico-oblonga, 10--16.5 cm. longa, 4.8--8 cm. lata, apice abrupte et obtuse caudato-acuminata, basi late rotundata. Inflorescentiae bisexuales, usque ad 16 cm. longae. Flores ♀ pedicellati, pedicello 4--7 mm. longo; calyce 3 mm. longo, lobis 5, ovatis; petalis 5; stylis 3. Flores ♂ pedicellati, pedicello 3--4 mm. longo; staminibus 12 vel 13.

A tree 18 m. high, densely ferruginous-lepidote and short hirtellous. Branchlets rather stout, angled. Petioles slender, up to 4.3 cm. long. Leaf blades membranaceous, entire, ovate-oblong or elliptic-oblong, 10 to 16.5 cm. long, 4.8 to 8 cm. wide, apex abruptly and obtusely caudate-acuminate, base broadly rounded, densely lepidote at first on both surfaces, glabrescent with age, eglandular, costa elevated beneath, pinnately veined, primary veins 8 or 9 pairs, rather conspicuous beneath. Racemes axillary and terminal, bisexual, up to 16 cm. long. Pistillate flowers with pedicels 4 to 7 mm. long; calyx 3 mm. long, 5-lobed, lobes ovate; petals 5, broadly spatulate, long-clawed, up to 3.5 mm. long, lepidote without, pilose within, villous-ciliate; ovary lepidote; styles 3, each branched 4 times. Staminate flowers with pedicels 3 to 4 mm. long; calyx 3.2 mm. long, lobes ovate; petals 5, up to 4 mm. long; stamens 12 or 13, filaments sparsely pilose, up to 5 mm. long; receptacle pilose.

Type in the University of Michigan Herbarium, Alexander F. Skutch 2575, collected in open woods, vicinity of El General, Prov. San José, Costa Rica, alt. 825 m., Feb. 1936.

Referable to the complex of C. glabellus L.

PERROTTETIA COSTARICENSIS Lundell, nom. nov.

Perrottetia racemosa Standl., Field Mus. Bot. 18: 633. 1937, not P. racemosa Loes.

PERROTTETIA SESSILIFLORA Lundell, sp. nov.

Arbor, ramulis glabris. Fetioli 6--10 mm. longi. Lamina integra, chartacea, lanceolato-oblonga, apice caudato-acuminate, basi rotundata et acutiuscula. Inflorescentiae ♀ paniculatae, flavo-puberulae. Flores sessiles vel subsessiles, puberuli, ca. 1 mm. longi.

Tree, 8 m. high, branchlets slender, glabrous. Petioles 6 to 10 mm. long. Leaf blades entire, lanceolate-oblong, 10.5 to 16 cm. long, 3.6 to 5.8 cm. wide, apex caudate-acuminate, base rounded and acutish, thinly chartaceous, barbate in the axils beneath, otherwise entirely glabrous, primary veins 7 to 10 on each side, the costa and veins conspicuous beneath. Inflorescence paniculate, axillary, the panicles much-branched, subsessile, up to 7.5 cm. long,

9 cm. wide, densely yellowish-puberulent. Pistillate flowers minute, about 1 mm. long, greenish-yellow, crowded, sessile or subsessile, puberulent. Calyx lobes about 0.4 mm. long, acutish. Petals triangular, acute, about 0.6 mm. long, glabrous inside. Stamens shorter than petals, inserted on margin of thin shallow disk. Ovary free, glabrous, depressed-globose, 2-celled, with 2 erect ovules in each cell; style slightly longer than ovary; stigma shallowly bifid. Staminate flowers and fruits unknown.

Type in the University of Michigan Herbarium, Alexander F. Skutch 2325, collected in vicinity of El General, Prov. San José, Costa Rica, alt. 915 m., December 1935. Duplicate in United States National Herbarium (no. 1642337).

This remarkably distinct species has entire leaves and sessile or subsessile flowers.

GUNNERA KILLIPIANA Lundell, sp. nov.

Herba perennis. Folia adpresse hirsuta, scabrida, cordato-rotundata, lobata et dentata. Inflorescentiae adpresse hirsutae, spicae usque ad 1.8 cm. longae, bractae fimbriatae, usque ad 1.8 cm. longae. Fructus ovoideus.

Coarse perennial herb, scabrid. Leaves long-stalked, large, cordate-rounded, palmately lobed, dentate, the teeth acute or acuminate, the longest ones up to 8 mm. long, both surfaces scabrid, the upper at first densely hirsute with short stout appressed brownish hairs, the under surface hirsute only along the veins, palmately veined, the veins prominent beneath. Inflorescence densely subappressed hirsute, the fertile part 25 cm. long. Flowers in compact short-stalked spikes up to 1.8 cm. long, each spike subtended by a subequal bract; calyx lobes up to 1.2 mm. long, with long filiform tip, the filiform part deciduous early; petals sparsely hirsute, deciduous early. Infructescence long-stalked, the fertile part up to 75 cm. long, the spikes up to 9 cm. long, hirsute; bract at base of spike lanceolate, oblong or oblanceolate, up to 1.8 cm. long, appressed-hirsute, fimbriate. Fruits (immature) glabrous, sessile, ovoid, about 2 mm. long including persistent part of calyx lobes.

Type in the University of Michigan Herbarium, Eizi Matuda 2763, collected at alt. of 1400 m. on Volcán de Tacaná, Chiapas, Mexico, March 17--23, 1939.

Mr. E. P. Killip was first to recognize the plant as a distinct species, and it is with pleasure that I dedicate it to him. Gunnera Killipiana is near to G. insignis (Oerst.) A. DC. Gunnera mexicana Brandeg., the only other Mexican species, is known to the writer from the brief original description only. It apparently differs from G. Killipiana amply in its leaf form being attenuate at the base

rather than deeply cordate.

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(a) Papers from the University of Michigan Herbarium.

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NOVELTIES AMONG THE AMERICAN VERBENACEAE

Harold N. Moldenke

Continued studies in the herbarium of the New York Botanical Garden and elsewhere have brought to light a good many as yet undescribed novelties in the Verbenaceae, some of which are presented herewith. More complete and detailed descriptions, as well as discussion of relationship and citation of specimens examined, will be found in the author's forthcoming generic monographs.

LIPPIA GEHRTII Moldenke, sp. nov.

Frutex; ramis ramulisque gracilibus dense albido-hispidis; nodis plusminus annulatis; foliis oppositis; petioliis alato-marginatis dense albido-hispidis; laminis chartaceis late ellipticis vel subovatis, ad apicem rotundatis, ad basim truncatis vel subtruncatis, regulariter serrato-dentatis utrinque albido-hirsutis.

Shrub; branches and branchlets slender, obtusely tetragonal, densely hispid with harsh white divergent hair 2.5--3 mm. long; nodes hidden, but apparently more or less annulate; principal internodes 0.9--3 cm. long; leaves decussate-opposite; petioles slender, 3--7 mm. long, canaliculate above, more or less wing-margined, densely white-hispid like the branchlets; blades chartaceous, rather uniformly dark-green on both surfaces, broadly elliptic or subovate, 1--4 cm. long, 0.7--3.2 cm. wide, rounded at apex, regularly serrate-dentate from base to apex with rounded or subacute, broad, short teeth, truncate or subtruncate at base (varying to acuminate and prolonged into the petiole on young twigs), abundantly hirsute on both surfaces with long white hair similar to that on the branchlets; midrib slender, impressed above, prominent beneath; secondaries slender, 4--6 per side, arcuate-ascending, impressed above, prominulous beneath; veinlet reticulation abundant, impressed above, prominulous beneath; inflorescence borne in terminal open panicles, consisting of 2 or 3 (or more) decussate pairs of stipitate heads and a sessile terminal one, the stipitate

ones about 1.5--2.5 cm. long, subtended by a pair of foliaceous bracts which are similar to the smaller leaves in all respects or somewhat obovate, 6--15 mm. long and 5--10 mm. wide (or larger), short-stipitate, densely hispid on both surfaces; axillary heads also often present in the uppermost leaf-axils beneath the panicle; inflorescence-branches densely white-hispid like the branchlets; heads oblong, 1.2--1.7 cm. long, 1--1.5 cm. wide, densely many-flowered; bractlets large and conspicuous throughout the head, ovate, sessile, very thin-textured, 5--7 mm. long, 4 mm. wide at base, sharp and acute at apex, softly pubescent with multicellular whitish somewhat bulbous-based hairs which are dense on the margins and more scattered on the body of the bractlets; corolla about 8 mm. long, its limb about 5 mm. in diameter.

The type of this species was collected by Guilherme Gehrt -- in whose honor it is named -- at Itirapina, São Paulo, Brazil [Herb. Instit. Biol. S. Paulo 8313] on April 29, 1923, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LIPPIA TEPICANA Moldenke, sp. nov.

Frutex vel arbor; ramis ramulisque subgracilibus saepe suberoso-marginatis dense resinoso-punctatis et griseo-puberulis; nodis annulatis; foliis oppositis; petiolis dense velutinis vel strigosis dense resinoso-granularibus; laminis crasse chartaceis, supra scaberrimis bullatis, ellipticis vel lanceolatis, ad apicem acutis, ad basim acuminatis, regulariter serrulatis, supra bulboso-pilosis, subtus dense breviterque pubescentibus vel tomentellis.

Shrub or tree; branches and branchlets rather slender, acutely or obtusely tetragonal, sometimes corky-margined, densely puberulent with grayish appressed hairs, less so in age, densely resinous-punctate; nodes annulate; principal internodes 0.5--3.5 cm. long; leaves decussate-opposite; petioles slender, 0.5--1.5 cm. long, varying from densely velutinous when young to merely short-pubescent or strigose and densely resinous-granular; blades firmly thick-chartaceous, uniformly gray-green on both surfaces or somewhat lighter beneath, very rough-scabrous and bullate above, elliptic or lanceolate, 2.5--9 cm. long, 1--5 cm. wide, acute at apex, regularly serrulate from almost the base to the apex with small acute antrorse teeth with subrevolute margins, acuminate at base, pilose above with harsh bulbous-based whitish hairs, densely short-pubescent or tomentellous beneath (velutinous-tomentose when young); midrib slender, mostly impressed above (or appearing as though raised by being more densely pilose), rounded-prominent beneath; secondaries slender, 5--9 per side, arcuate-ascending, impressed above, prominent beneath; veinlet reticulation abundant,

impressed above, sharply prominent beneath; inflorescence axillary, paniculate, one panicle and sometimes also 1 or 2 single-headed peduncles issuing from each axil or sometimes only several single-headed peduncles; the simple inflorescences 1--3 cm. long, the panicles to 9 cm. long; peduncles and inflorescence-branches very slender, 1--4.5 cm. long, densely puberulent, short-pubescent, or strigose with cinereous hair; panicles with 1--3 whorls of capitate branches; heads hemispheric during anthesis, oblong in fruit, densely many-flowered, 3--14 mm. long, 5--10 mm. wide; bractlets large, conspicuous, imbricate in many ranks, persistent, dry and scarious in fruit, reniform, 3--5 mm. long, 4--6 mm. wide, densely puberulent on both surfaces during anthesis, glabrate and prominently venose in fruit; receptacle 3--7 mm. long.

The type of this species was collected by Edward Palmer (no. 1969), at Tepic, Nayarit, Mexico, between January 5 and February 6, 1892, and is deposited in the Britton Herbarium at the New York Botanical Garden.

STACHYTARPHETA CALDERONII Moldenke, Suppl. List Vern. Names 23, nom. nud. (1940), sp. nov.

Herba; ramis crassiusculis subglabratiss vel sparse albido-hirsutis; nodis hirsuto-annulatis; foliis oppositis; petiollis alato-marginatis sparse hirsutis; laminis membranaceis ellipticis, supra scaberrimis, ad apicem acutis, ad basim longe acuminatis, crassiuscule serratis utrinque sparse hirsutis.

Herb; stems rather stoutish, obtusely tetragonal, subglabrous or bearing a few scattered, long, white, hirsute hairs at the nodes and when young; nodes annulate, mostly marked by a circumferential band of long, white, more or less divergent, hirsute hairs 1--2 mm. long; leaves decussate-opposite; petioles slender, 5--10 mm. long, wing-margined, sparsely hirsute with widely scattered white hairs like those at the nodes; blades membranous, rather uniformly dark green on both surfaces, very scabrous above, elliptic, 5--9 cm. long, 1.9--2.6 cm. wide, acute at apex, long-acuminate at base and prolonged into the petiole-wings, rather coarsely serrate from below the middle to the apex with sharply acute often irregular teeth, sparsely hirsute on the larger venation on both surfaces with scattered white hairs like those on the petioles and very sparingly so on the lamina itself or hirsutulous throughout on the upper surface, densely pustulate-punctate above; midrib slender, flat above, prominulous beneath; secondaries very slender, 6--8 per side, arcuate-ascending, flat above, flat or slightly prominulous beneath, joined in many loops near the margins; veinlet reticulation abundant, obscure or indiscernible a-

bove, flat beneath; spikes terminal, 11.5--25 cm. long, very densely many-flowered, erect; flowers imbricate to the base; peduncles obsolete; rachis deeply excavated, stout, 3--4 mm. wide, glabrous or sparsely hirsute at the very base; bractlets lanceolate, 6--7 mm. long, to 2 mm. wide, long-acuminate at apex, closely appressed, glabrous, the margins entire and not scarious; corolla 8--10 mm. long, its limb about 5 mm. in diameter, glabrous.

The type of this species was collected by Salvador Calderón y Arana (no. 989) -- in whose honor it is named -- near Chalchuapa, Salvador, in 1922 and is deposited in the United States National Herbarium at Washington.

x STACHYTARPHETA HYBRIDA Moldenke, hybr. nov.

Herba perennis multibrachiatis; caulis ramisque gracilibus sparse albido-hirsutulis glabrescentibus; nodis indistincte annulatis; foliis oppositis plerumque fasciculatis; petiolis obsoletis vel brevibus et late alatis; laminis tenuiter chartaceis ellipticis, ad apicem acutis vel rotundatis, ad basim abrupte cuneatis et in petiolum attenuatis, regulariter serratis utrinque sparse albido-hirsutulis.

Probably a hybrid between S. jamaicensis (L.) Vahl and S. strigosa Vahl. Perennial herb, abundantly branched from the base; stems and branches slender, acutely or obtusely tetragonal, scattered-pilose with long, divergent, whitish, hirsutulous hairs, glabrescent in age; nodes indistinctly annulate; principal internodes 0.8--4 cm. long; leaves decussate-opposite, usually bearing 2 or more smaller ones on greatly abbreviated twigs in their axils; petioles obsolete or, if present, broadly winged and scarcely distinguishable from the long-acuminate base of the blade; blades thin-chartaceous, uniformly colored on both surfaces, often brunescent in drying, the expanded portion elliptic, 1--3.5 cm. long, 0.5--2.1 cm. wide, acute at apex (or rounded in outline), regularly serrate with short antrorse teeth, abruptly cuneate at base and attenuate into the long petiole-like acumination, which is to 2 cm. long, sparsely pilose on both surfaces with scattered whitish hirsutulous hairs, more densely so on the midrib and secondaries; midrib slender, flat on both surfaces or slightly prominulous beneath; secondaries 4--6 per side, very slender, flat on both surfaces or slightly prominulous beneath; veinlet reticulation indiscernible on both surfaces; spikes terminal, 15--24 cm. long, rather slender, many-flowered, the flowers imbricate but not especially dense; peduncles abbreviated, 1--2 cm. long, sparsely pilose-hirsutulous; rachis about 3 mm. wide, deeply excavated, very sparsely scattered-pilose at base, glabrescent above; bractlets lanceolate, 5--8.5 mm. long, to 2 mm. wide, regularly triangular-attenuate from about the middle

to the filiform apex, the upper margins subscarious and usually several-denticulate, very minutely and obscurely puberulous on the back and margins.

The type of this hybrid was collected by Erik Leonard Ekman (no. H.11,978) in a pineland at an altitude of about 1100 m., Sierra de Ocoa, prov. de Azua, San José de Ocoa, near Bejucal, Dominican Republic, on March 18, 1929, and is deposited in the United States National Herbarium at Washington.

STACHYTARPHETA MUTABILIS var. **MAXONI** Moldenke, var. nov.

Hæc varietas a forma typica speciei recedit spicis tenuioribus; ramis petiolisque sparsiore pubescentibus; laminis foliorum supra sparse pilosis, subtus dense adpresso-puberulis.

This variety differs from the typical form of the species in its more slender spikes (4--5 mm. in diameter, exclusive of the corollas) and its less densely pubescent branches, petioles, and leaf-blades -- the upper leaf-surface being merely scattered-pilose, the lower surface merely densely puberulent with very short and appressed hair. The leaves are also larger, to 13 cm. long and 6 cm. wide, abruptly long-acuminate at base into the winged petiole.

The type of this variety was collected by William Randolph Maxon (no. 7742) -- in whose honor it is named -- on an open bank near shore of lake, at an altitude of about 300 m. at Laguna de Masaya, Nicaragua, on July 6, 1923, and is deposited in the United States National Herbarium at Washington.

STACHYTARPHETA QUIROSANA Moldenke, sp. nov.

Fruticulus; ramis gracilibus sparsiuscule subadpresso-pilosis; nodis annulatis; foliis ternatis fasciculatis; petiolis subobsoletis vel usque ad 5 mm. longis dense breviterque pubescentibus; laminis tenuiter chartaceis ellipticis vel obovatis, ad apicem acutis, ad basim cuneato-acuminatis, regulariter serratis, supra sparsiuscule adpresso-pilosis non scabris, subtus dense breviterque pubescentibus.

Shrubby; stems slender, obtusely tetragonal (or 5-angled) and rather sparsely pilose with short, white, subappressed, antrorse hairs; nodes annulate; principal internodes 3.5--9.5 cm. long; leaves ternate, usually with several additional small ones on greatly abbreviated twigs in their axils; petioles mostly obsolete on mature leaves, or slender, to 5 mm. long, and densely short-pubescent on small leaves; blades thin-chartaceous, dark-green above, slightly lighter beneath, elliptic or obovate, 2.5--7.5 cm. long, 1--3.2 cm. wide, acute at apex, regularly serrate-dentate with broadly triangular mucronulate teeth from about the middle or below the middle to the apex, cuneately narrowed to the long-

acuminate base, rather sparsely scattered-pilose above with appressed antrorse whitish hair, not scabrous, densely short-pubescent with sordid appressed hairs beneath; midrib slender, flat above, prominent beneath; secondaries very slender, 5 or 6 per side, flat and usually obscure above, arcuate-ascending, prominulous beneath; veinlet reticulation delicate, indiscernible above, flat and often obscure beneath; spikes terminal, solitary, 16--50 cm. long, stout or slender, 5--10 mm. in diameter (exclusive of the corollas), densely many-flowered, the flowers imbricate above, barely so or separate toward the base, somewhat loosely divergent during anthesis; rachis slender or stout, 2--5 mm. in diameter, densely appressed-pilose when young, less so in age, deeply excavated; bractlets lanceolate, 6--7 mm. long, 1--1.3 mm. wide, long-attenuate to a filiform apex, sparsely pilose; corolla hypocrateriform, its tuba about 2 cm. long, its limb about 1--1.5 cm. in diameter.

The type of this species was collected by August Weberbauer (no. 6343) above Curilcás, in the valley of the Quiros, alt. 1700--2000 m., prov. Ayavaca, Piura, Peru, in May, 1912, and is deposited in the herbarium of the Field Museum of Natural History at Chicago.

STACHYTARPHETA RORAIMENSIS Moldenke, sp. nov.

Frutex (?); laminis foliorum chartaceis lanceolatis, ad apicem acutis, ad basim longe acuminatis, regulariter serratis subrevolutis, supra sparse pilosulis et minute pustulato-scabris, subtus densiuscule puberulis; bracteolis lanceolatis longe caudatis minute puberulis vel glabratibus.

Shrubby (?); leaf-blades chartaceous, dark-green above, somewhat lighter beneath, lanceolate, about 10 cm. long and 3.5 cm. wide, acute at apex, regularly and abundantly serrate from below the widest point to the apex with antrorse rounded teeth about 1--2 mm. long and subrevolute-margined, gradually narrowed to the long-acuminate base, the basal acumination entire, sparsely pilosulous above and minutely pustulate, scabrous, rather densely puberulent (especially on the venation) beneath with short sordid hair; midrib slender, subimpressed above, prominent beneath; secondaries very slender, about 7 per side, arcuate-ascending, impressed above, prominulous beneath, not directly joined at the margins; veinlet reticulation abundant, the larger portions subimpressed above and prominulous beneath; spikes stout, about 1 cm. wide (exclusive of the corollas), very densely many-flowered with closely appressed and imbricate flowers; rachis slender, about 2.5 mm. in diameter, glabrate; bractlets lanceolate, about 1 cm. long and 1 mm. wide at the widest point, long-caudate to a filiform apex, very minutely puberulent or glabrate.

The type of this species was collected by Moritz Richard Schomburgk on Mount Roraima, British Guiana, in 1842 or 1843 and is deposited in the herbarium of the Royal Botanic Gardens at Kew, a fragment in the herbarium of the Field Museum of Natural History at Chicago.

VERBENA HALEI f. *ROSEIFLORA* (Benke) Moldenke, comb. nov.

Verbena officinalis f. *roseiflora* Benke, *Rhodora* 35: 45. 1933.

VERBENA NIVEA Moldenke, sp. nov.

Herba nana procumbens; ramis radiato-patentibus gracillimis densiuscule cinereo-puberulis glabrescentibus; hornotinis densissime breviterque cinereo-pubescentibus; nodis obscure annulatis; foliis oppositis numerosis fasciculatis; petiolis anguste alato-marginatis densiuscule vel sparse cinereo-strigosis; laminis chartaceis ovatis utrinque dense cinereo-strigosis 3-lobatis vel 3-partitis, lobis 2- vel 3-lobulatis, lobulis obtusis revolutis.

Low procumbent herb, branched from the base; branches spreading in radial fashion, very slender, sometimes almost filiform, obtusely subtetragonal, rather densely puberulent with very short spreading cinereous hair, more sparsely so or glabrescent in age, the youngest branchlets very densely short-pubescent with spreading cinereous hairs; nodes faintly annulate; principal internodes 0.5--2.5 cm. long, mostly greatly abbreviated; leaves decussate-opposite, numerous, usually with several much reduced ones in their axils; petioles slender, 1--4 mm. long, flattened, deeply canaliculate above, narrowly winged-margined, rather densely or sparsely strigose with appressed whitish hairs; blades chartaceous, uniformly gray-green on both surfaces, ovate in outline, 4--8 mm. long and wide, densely strigose with appressed whitish antrorse hair on both surfaces, 3-lobed or -parted almost to the base, each division often again 2- or 3-lobed, the lobes all obtuse at apex and revolute-margined; the very slender midrib and secondaries impressed above, slightly prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence terminal, capitate; heads small, many-flowered, dense, subsessile or very short-pedunculate; calyx tubular, 3--4 mm. long, often purplish, densely short-pubescent with whitish rather spreading hair; corolla white, its tube about 5 mm. long, its limb about 2.5--3 mm. in diameter.

The type of this species was collected by Santiago Venturi (no. 10,014) along the highway to San Antonio, Rosario de Lerma, alt. 3000 m., Salta, Argentina, in December, 1929, and is deposited in the Britton Herbarium at the New York Botanical Garden.

CLERODENDRUM TERNIFOLIUM var. *MEXIAE* Moldenke, Geogr. Distrib. 22, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit lobis calycis late triangulato-ovatis ad apicem acutis.

This variety differs from the typical form of the species in the calyx-lobes being broadly triangular-ovate and merely acute at apex, instead of long-attenuate and acuminate.

The type was collected by Ynes Mexia (no. 6757) -- in whose honor it is named -- on an overflow flat near sea level between Guayaquil and Salinas, Guayas, Ecuador, between December 10 and 14, 1934, and is deposited in the United States National Herbarium at Washington.

DURANTA PSEUDOREPENS Moldenke, sp. nov.

Frutex; ramulis pergracilibus tetragonis marginatis adpresso-puberulis; foliis oppositis; petiolis gracilibus minute puberulis; laminis subcoriaceis ellipticis vel ovatis, ad apicem rotundatis, ad basim breviter acuminatis, serratis supra glabrescentibus, subtus minutissime puberulis; inflorescentiis terminalibus axillaribusque dense puberulis.

Shrub; branchlets very slender, tetragonal, margined, appressed-puberulent; nodes not annulate; principal internodes 1.5--4.5 cm. long; leaves opposite or subopposite; petioles very slender, 5--6 mm. long, minutely puberulent; blades subcoriaceous, dark-green above, somewhat lighter beneath, elliptic or ovate, 2.8--4.5 cm. long, 1.6--3 cm. wide, rounded at apex, short-acuminate at base, serrate from the widest part to the apex, glabrescent above, very minutely puberulent beneath, revolute, the margins rolled in against the top of the petiole at base; midrib slender, subimpressed above, prominent beneath; secondaries slender, 3 or 4 per side, subimpressed above, sharply prominent beneath, arcuate-ascending; veinlet reticulation sparse, the larger parts subimpressed above and prominulous beneath; inflorescence axillary and terminal, racemiform, the axillary ones two per node, abbreviated, 2--4 cm. long, rather few-flowered, the terminal one about 7.5 cm. long; rachis densely short-pubescent; pedicels slender, 1--2 mm. long, densely short-pubescent; foliaceous bractlets often present, about 5 mm. long and 2.5 mm. wide; prophylla setaceous, 2 mm. long, short-pubescent; calyx tubular, 6--7 mm. long, 3--4 mm. wide, appressed-puberulent, 5-apiculate; corolla-tube curved, 1--1.3 cm. long.

The type of this species was collected by Richard Spruce (no. 6042) in the Andes of Ecuador, between 1857 and 1859, and is deposited in the Britton Herbarium at the New York Botanical Garden.

DURANTA HITCHCOCKII Moldenke, sp. nov.

Frutex vel arbor; ramulis gracilibus valde spinosis dense adpresso-pubescentibus, pilis cinereis subtomentellis, in senectute dense puberulis, acute vel obtuse tetragonis; spinis oppositis vel ternatis; foliis oppositis vel approximatis vel ternatis coriaceis breviter petiolatis; laminis ellipticis vel obovatis, ad apicem rotundatis minute apiculatis, integris revolutis, ad basim cuneatis, supra minute pilosulis vel glabratiss, subtus plusminus dense puberulis glanduloso-punctatis; inflorescentiis axillaribus terminalibusque abbreviatis.

Shrub or small tree, to 4 m. tall; branches and branchlets slender, acutely or obtusely tetragonal, conspicuously spinose, densely appressed-pubescent with cinereous tangled hair, in age merely densely puberulent, opposite or ternate; spines opposite or ternate, slender, 6--20 mm. long, unbranched, very sharp and stiff; nodes not annulate; principal internodes 1--2.5 cm. long; leaves numerous, opposite, approximate, or ternate; petioles very slender, 1--5 mm. long, densely appressed-pubescent; blades coriaceous or subcoriaceous, slightly lighter beneath, elliptic or obovate, 1--2.5 cm. long, 5--13 mm. wide, mostly rounded and minutely apiculate at apex, sometimes subacute, entire and slightly revolute along the margins, cuneate at base and usually prolonged into the petiole, minutely pilosulous above or glabrate in age, more or less densely puberulent and glandular-punctate beneath; midrib slender, impressed above, prominent beneath; secondaries very slender, 2 or 3 per side, ascending, not much arcuate, obscure or subimpressed above, prominent beneath; veinlet reticulation indiscernible on either surface; inflorescence axillary and terminal, racemiform, abbreviated, few-flowered; calyx tubular, about 5 mm. long and 2 mm. wide, densely short-pubescent; corolla-tube about 12 mm. long, its limb about 10 mm. wide, sweet-scented, pale-blue or lilac.

The type of this species was collected by this distinguished American botanist, Albert Spear Hitchcock (no. 20821) -- in whose honor it is named -- between Otavalo and Malchingui, Imbabura or Pichincha, Ecuador, at an altitude of 2400--3000 m., on August 12, 1923, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is also known from Chimborazo and Bolívar.

DURANTA PENLANDI Moldenke, sp. nov.

Frutex spinosus; ramis gracilibus debilibus; ramulis acute tetragonis marginatis minutissime puberulis glabrescentibus ut videtur inermibus; foliis verticillatis; petiolis brevibus subglabratiss; laminis subcoriaceis ellipticis abrupte acutis supra mediam serratis subrevolutis, infra mediam integris valde revolutis, ad basim breviter acuminatis,

utrinque glabris; inflorescentiis numerosis racemiformibus ubique minutissime puberulis glabrescentibus.

Spiny shrub; branches slender, weak, to 3 m. long; branchlets slender, acutely tetragonal, margined, very minutely puberulent, soon glabrescent, apparently unarmed; nodes not annulate; principal internodes 3--4 cm. long; leaves whorled in 4's; petioles very slender and short, 2--4 mm. long, subglabrate; blades coriaceous, dark-green and lustrous above, slightly lighter beneath, elliptic, 1.9--3.8 cm. long, 1.2--2.1 cm. wide, abruptly acute at apex, short-acuminate at base, uniformly serrulate from about the middle to the apex with small appressed sharp-pointed teeth and subrevolute, entire and pronouncedly revolute from about the middle to the base, the two margins rolled in against the top of the petiole in characteristic fashion, glabrous on both surfaces; midrib slender, subimpressed above, sharply prominent beneath; secondaries slender, 4--7 per side, subimpressed above, sharply acute beneath; veinlet reticulation very sparse, obscure or indiscernible on both surfaces; inflorescences axillary, racemiform, 4 per node, 3.5--9 cm. long, rather loosely many-flowered, the flowers subsecund; rachis and peduncles sharply tetragonal, very minutely puberulent, glabrescent; pedicels 2--4 mm. long, very minutely puberulent or glabrescent; prophylla minute, setaceous, 1--2 mm. long; calyx tubular, 6--7 mm. long, about 4 mm. wide, 5-apiculate, very minutely puberulent, bluish-purple and green; corolla pale blue-lilac, its tube curvate, about 1 cm. long; fruit tough, juicy, dull-yellow, splitting the mature calyx.

The type of this species was collected by Charles William Theodore Penland and Robert H. Summers (no. 958) in the vicinity of Tambillo, at an altitude of 2800 m., Fichincha, Ecuador, on June 26, 1939, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is named in honor of its distinguished senior collector.

LANTANA GLAZIOVII Moldenke, sp. nov.

Herba perennis nana, ad basim lignosa; ramis erectis pergracilibus, simplicibus densissime lanato-pubescentibus; foliis oppositis paucis sessilibus; laminis ellipticis vel subrotundis, ad basim et apicem acutis vel obtusis, subintegris vel serrulatis, utrinque dense lanato-pubescentibus.

Very dwarf perennial herb, woody at base, to about 12 cm. tall, gnarled at base; stems several or numerous, erect, very slender, simple, very densely lanate-pubescent with white or cinereous hairs; leaves decussate-opposite, few, sessile; blades thin-chartaceous, elliptic or subrotund, 4--14 mm. long, 3--6 mm. wide, acute or obtuse at both ends, varying from subentire to uniformly serrate with small blunt

teeth from almost the base to the apex, densely lanate-pubescent with albidous hairs on both surfaces; inflorescence axillary; capitulae abundant in all the upper leaf-axils, solitary, opposite; peduncles very slender, 1--3 cm. long, ascending, densely hirsutulous-pubescent with whitish hairs; corolla-tube about 7 mm. long, its limb about 3 mm. wide.

The type of this species was collected by Auguste François Marie Glaziou (no. 21,892) -- in whose honor it is named -- on the central plateau of Goyaz, Brazil, in 1894 or 1895, and is deposited in the Delessert Herbarium at the Conservatoire Botanique at Geneva.

LANTANA HAUGHTII Moldenke, sp. nov.

Frutex; ramis gracilibus tetragonis dense adpresso-puberulis glabrescentibus; foliis oppositis; petiolis gracilibus dense breviterque albido-pubescentibus; laminis firme chartaceis lanceolatis obtusis regulariter serrulatis, ad basim acutis vel acuminatis, supra bullatis dense adpresso-strigosis, subtus densissime velutino-tomentellis; inflorescentiis axillaribus capitatis ubique dense canescento-puberulis vel breviter pubescentibus; bracteolis magnis late ellipticis vel ovatis.

Shrub; branchlets slender, obtusely or acutely tetragonal, densely appressed-puberulent, glabrescent in age; nodes not annulate; leaf-scars large, corky, divergent; principal internodes 1--7.5 cm. long; leaves decussate-opposite, often with several much smaller ones borne on much abbreviated twigs in their axils; petioles very slender, 4--8 mm. long, densely short-pubescent with whitish hairs; blades firmly chartaceous, dark-green above, gray-green beneath, lanceolate or elliptic-ovate, 1--3.5 cm. long, 0.7--2 cm. wide, obtuse at apex, regularly serrulate, acute or acuminate at base, bullate and densely appressed-strigose above, very densely velutinous-tomentellous beneath with sordid or whitish hairs; midrib slender, impressed above; prominent beneath; secondaries slender, 4--6 per side, ascending, not much arcuate, deeply impressed above, slightly prominulous beneath; veinlet reticulation abundant, deeply impressed above, prominulous or hidden by the tomentum beneath; inflorescence axillary, capitate; peduncles very slender, 2 per node, 3--6 cm. long, densely appressed-pubescent or albidous-puberulent; heads densely many-flowered, 1--1.5 cm. in diameter; bractlets large, conspicuous, broadly elliptic or ovate, to 9 mm. long and 4 mm. wide, acute at apex, densely canescent-puberulent or substrigose; corolla white, its tube about 7 mm. long, its limb about 3 mm. wide.

The type of this species was collected by Oscar Haught (no. 132) -- in whose honor it is named -- in the Anotape Hills, Piura, Peru, in November, 1927, and is deposited in

the Britton Herbarium at the New York Botanical Garden.

LANTANA PAVONII Moldenke, sp. nov.

Frutex; ramulis sarmentisque gracillimis sparsissime hirsutis; foliis oppositis; petiolis gracilibus alatis sparse hirsutis; laminis chartaceis ellipticis vel subrotundis acutis serrulatis, ad basim acuminatis, supra sparsiuscule hirsutulis (in senectute scabris bullatis), subtus dense hirsutis.

Low shrub (?); branchlets and twigs very slender, very sparsely hirsute with scattered hairs; leaves decussate-opposite; petioles slender, 2--5 mm. long, hirsute with scattered hairs, alate-margined; blades chartaceous, elliptic or subrotund, 1.2--3 cm. long, 7--15 mm. wide, acute (or obtuse) at apex, rather densely serrate from the widest part (or below) to the apex with very small rounded teeth, acuminate at base, rather sparsely hirsutulous above, becoming very rough and bullate in age, more densely hirsute (especially along the venation) beneath; inflorescence axillary, 2.5--3.5 cm. long, solitary, opposite, ascending; peduncles very slender, 2--2.8 cm. long, hirsutulous like the twigs, capitulae to 8 mm. long and 19 mm. wide.

The type of this perplexing species was collected by José Antonio Pavon -- in whose honor it is named -- somewhere in Peru, and is deposited in the Delessert Herbarium at the Conservatoire Botanique at Geneva. It was named "Lantana scabra Pavon, n. sp." by the collector.

LANTANA RUBELLA Moldenke, sp. nov.

Frutex; ramulis gracilibus tetragonis marginatis; sarmentis pergracillimis numerosis abbreviatis dense breviterque pubescentibus; foliis oppositis; petiolis gracillimis brevibus adpresso-puberulis; laminis submembranaceis ellipticis obtusis supra mediam serrulatis, ad basim acutis, supra minutissime puberulis vel glabrescentibus, subtus puberulis dense glanduloso-punctatis; inflorescentiis axillaribus subspicatis; bracteolis oblanceolatis; calycibus dense hirsutis.

Erect shrub, to 2.5 m. tall; branchlets slender, obtusely or subacutely tetragonal, margined (the margins coming loose and splitting off in age), densely short-pubescent with brownish hairs, glabrescent in age; twigs very slender, numerous, abbreviated, densely short-pubescent; nodes annulate; principal internodes on twigs 3--12 mm. long, on branchlets to 5.5 cm. long; leaves decussate-opposite, numerous; petioles very slender, short, 1--5 mm. long, appressed-puberulent with dark brownish hairs; blades submembranous, dark-green above, much lighter beneath, elliptic, 1--2.3 cm. long, 3--10 mm. wide, obtuse at apex, serrulate from the widest part to the apex with subacute teeth, acute at base,

very minutely puberulent or glabrescent above, puberulent and densely glandular-punctate beneath; midrib very slender, usually subimpressed above, prominulous beneath; secondaries very slender, usually subimpressed above, 3 or 4 per side, subprominulous beneath; veinlet reticulation obscure or indiscernible above, plane beneath; inflorescence axillary, subspicate, few-flowered; peduncles very slender, 5--15 mm. long, appressed-pubescent; bractlets oblanceolate, about 5 mm. long and 1.5 mm. wide, rounded or truncate at apex, appressed-puberulent; calyx densely spreading-hirsute and resinous-punctate; corolla deep-pink, its tube about 5 mm. long, its limb about 2 mm. wide.

The type of this species was collected by Ynes Mexia (no. 5845) in a shallow moist valley at Diamantina, on the upper slope of the Serra do Rio Grande, at an altitude of about 1290 m., Minas Geraes, Brazil, on May 15, 1931, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LANTANA TOMASII Moldenke, sp. nov.

Fruticulus; ramis ramisque mediocriter gracilibus obtuse tetragonis dense puberulis; foliis oppositis; petiolis gracilibus dense tomentellis; laminis chartaceis vel submembranaceis ovatis vel subacuminatis, regulariter serratis, ad basim acutis vel rotundatis, supra scabropilosis subbullatis, subtus dense tomentellis; inflorescentiis axillaribus capitatis; bracteolis magnis oblongo-ovatis dense breviterque pubescentibus.

Shrubby, about 80 cm. tall; branches and branchlets medium-slender, obtusely tetragonal, unarmed, densely puberulent or tomentellous; nodes annulate; principal internodes 1--9 cm. long; leaves decussate-opposite; petioles slender, about 1 cm. long, densely tomentellous; blades chartaceous or submembranous, ovate, 3--11 cm. long, 2--6 cm. wide, acute or subacuminate at apex, regularly serrate from apex almost to the base, rounded at base or acute when immature, scabrous-pilose and subbullate above, densely tomentellous beneath; the slender midrib, secondaries, and veinlet reticulation impressed above and prominulous beneath; inflorescence axillary, capitate, densely many-flowered, about 1.5 cm. long and wide; bractlets large and conspicuous, the lowermost oblong-ovate, about 1 cm. long and 6 or 7 mm. wide, densely short-pubescent, obtuse at apex; corollas about 9 or 10 mm. long, purple.

The type of this species was collected by Brother Tomas (no. 579) -- in whose honor it is named -- at Béelo, Antioquia, Colombia, on June 14, 1939, and is deposited in the United States National Herbarium at Washington. It is obviously closely related to *Lantana boyacana* Moldenke.

LANTANA VELUTINOIDES Moldenke, sp. nov.

Frutex; ramulis gracilibus acute tetragonis densiuscule pubescentibus; foliis ternatis; petiolis gracilibus dense pubescentibus; laminis chartaceis lanceolato-ovatis, ad apicem acutis vel breviter acuminatis, ad basim rotundatis, regulariter serratis, supra dense pubescentibus, subtus densissime velutino-tomentosis; inflorescentiis axillaribus perabbreviatis spicatis; bracteolis ovatis dense breviterque pubescentibus.

Shrub; branchlets slender, rather acutely tetragonal, rather densely short-pubescent; nodes not annulate; principal internodes 2.5--3.5 cm. long; leaves ternate; petioles slender, about 5 mm. long, densely short-pubescent; blades chartaceous, dark-green above, very much lighter beneath, lanceolate-ovate, 3--4.5 cm. long, 1.5--2 cm. wide, acute or short-acuminate at apex, regularly serrate from base to apex with small rounded teeth, rounded at base, densely short-pubescent with appressed hairs above, very densely velutinous-tomentose with sordid hairs beneath; midrib slender, impressed above, prominulous beneath; secondaries very slender, impressed above, prominulous beneath, 4--6 per side, arcuate-ascending; veinlet reticulation very abundant, impressed above, prominulous beneath and plainly visible through the tomentum; inflorescence axillary, much shorter than the subtending leaves, exceeding the petioles, 1.5--2.4 cm. long, capitata-spicate, densely many-flowered; peduncles slender, 5--9 mm. long, densely short-pubescent; bractlets conspicuous, ovate, about 5 mm. long and 3 mm. wide, densely short-pubescent with cinereous hairs, sharply acute at apex.

The type of this species was collected by H. Luederwaldt [Herb. Instit. Biol. S. Paulo 15,669] at Ipiranga, São Paulo, Brazil, in March, 1912, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LANTANA VELUTINOIDES var. *BRUCHII* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit foliis inflorescentisque oppositis, pedunculis usque ad 4.5 cm. longis, spicis usque ad 3 cm. longis, et bracteolis usque ad 8 vel 9 mm. longis et latis.

This variety differs from the typical form of the species in having its leaves and inflorescences opposite, peduncles to 4.5 cm. long, spikes to 3 cm. long, and bractlets to 8--9 mm. long and wide.

The type of this variety was collected by C. Bruch (no. 2831) -- in whose honor it is named -- at Unquillo, Córdoba, Argentina, in 1926, and is deposited in the Britton Herbarium at the New York Botanical Garden.

LIPPIA ASPERRIMA var. *ROTUNDATA* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit laminis foliorum ad apicem obtusis vel rotundatis.

This variety differs from the typical form of the species in having its leaf-blades obtuse or rounded at the apex. The petioles are 1--4 mm. long, margined; leaf-blades elliptic, 1.8--3.7 cm. long, 1.2--2.4 cm. wide, regularly serrate almost to the base with blunt teeth, acute at base and prolonged into the short petiole; venation decidedly impressed above, only the midrib and secondaries slightly prominulous beneath; peduncles 3--3.5 cm. long; branchlets densely glandular-pubescent with short dark hairs and also copiously hirsute with white spreading hairs twice as long, less densely so in age. The hairs on the upper leaf-surface apparently become bulbous-based in age, first along the margins, finally over the entire lamina. The upper leaf-surface is scabrous at all times.

The type of this variety was collected by Frederico Carlos Hoehne at Ponta Grossa, Paraná, Brazil, on November 1, 1928, and is deposited in the herbarium of the Instituto Biologico de Defesa Agricola e Animal at São Paulo [no. 23268]

LIPPIA HOEHNEI Moldenke ex Hoehne, Resen. Hist. Comm. Vigés. Anniv. Secc. Bot. 153 & 161, hyponym (1937), sp. nov.

Fruticulus; ramulis sarmentisque gracilibus ubique dense puberulis; foliis oppositis sessilibus amplexicaulibus; laminis suborbicularibus rotundatis, ad basim cordatis, regulariter serratis vel sinuatis, supra nitidulis minute puberulis, subtus densiuscule pubescentibus; inflorescentiis axillaribus terminalibusque paniculatis; bracteis magnis ovatis sessilibus acutis integris vel serratis; capitulis densis breviter pedunculatis confertis.

Shrubby; branchlets and twigs slender, ascending, buff-colored, densely puberulent throughout with very short erect brownish hairs; nodes annulate; leaves decussate-opposite, sessile, clasping at base; blades suborbicular, 3--6 cm. long and wide, rounded (in outline) at apex, cordate at base, regularly serrate from base to apex with appressed and bluntish teeth or sinuate below, the very apex often marked with a sharply acute or acuminate tooth, minutely puberulent and rather shiny above, rather densely spreading-pubescent on the whole venation beneath; midrib, secondaries, and vein and veinlet reticulation subimpressed above, very prominent and conspicuous beneath in a beautiful reticulum; inflorescence axillary and terminal, clustered in a dense panicle at the tips of the branches, the inflorescence-branches erect or ascending, conspicuously bracteate with large ovate sessile and entire or serrate acute bracts; capitulae dense, short-pedunculate, crowded.

The type of this handsome species was collected by Fred-

erico Carlos Hoehne [Com. Rondon 2177] -- in whose honor it is named -- at Três Jacús, Mattogrosso, Brazil, in 1908, and is deposited in the herbarium of the Instituto Biologico de Defesa Agricola e Animal at São Paulo.

LIPPIA MATTOGROSSENSIS Moldenke, sp. nov.

Herba (?) perennis; ramulis gracilibus obtuse tetragonis dense hirsutis; foliis oppositis; petiolis gracilibus dense hirsutis; laminis tenuiter chartaceis ovatis vel elliptico-ovatis acutis serratis, ad basim acutis vel rotundatis, supra hirsutis; subtus dense hirsuto-tomentosis; inflorescentiis axillaribus capitatis confertis; capitulis densis.

Herb (?) or shrub; branchlets slender, obtusely tetragonal, brown, densely hirsute with long white hairs (1--1.3 mm. long), rather twiggy; principal internodes 3--4.5 cm. long; leaves decussate-opposite; petioles slender, 4--10 mm. long, densely hirsute like the branchlets; blades thin-chartaceous, dark-green, lighter beneath, elliptic-ovate or ovate, 2--5.5 cm. long, 1.2--2.6 cm. wide, acute, serrate from base to apex with small blunt teeth (6--9 per cm. of margin), acute or rounded at base, hirsute above with hairs precisely like those on the branchlets, twigs, and petioles, densely hirsute-tomentose beneath with somewhat shorter tangled whitish or cinereous hairs and also densely granular-pulverulent and resinous; midrib slender, flat or obscurely subimpressed above, prominulous beneath; secondaries slender, 6--10 per side, usually irregular, arcuate-ascending, slightly subimpressed above, prominulous beneath; vein and veinlet reticulation abundant, rather obscurely subprominulous above, prominulous and dark beneath; inflorescence axillary, capitate, numerous, 4--6 in each upper leaf-axil (rarely reduced to 1 per axil in the lowermost axils of the twigs); peduncles very slender, 5--16 mm. long, densely long-hirsute like the twigs; heads dense, 4--10 mm. long, 7--9 mm. wide.

The type of this species was collected by Frederico Carlos Hoehne [Com. Rondon 470] at Coxipó da Ponte, Mattogrosso, Brazil, in March, 1911, and is deposited in the herbarium of the Instituto Biologico de Defesa Agricola e Animal at São Paulo.

LIPPIA MICROMERA var. *PALUDICOLA* Moldenke, var. nov.

Haec varietas a forma typica speciei recedit ramulis sarmentisque tantum pulverulento-punctatis (non patento-pubescentibus), foliis angustis integris tantum pulverulento-punctatis (non breviter pubescentibus vel puberulis).

This variety differs from the typical form of the species in having its branchlets and twigs merely densely pulverulent-punctate, instead of spreading short-pubescent, and in having its petioles and the very narrow and entire leaf-

blades also merely pulverulent-punctate on both surfaces, instead of short-pubescent or puberulent.

The type was collected by Jacques Samuel Blanchet (no. 2872) in swamps at Ilhabina, Bahia (?), Brazil, in 1839, and is deposited in the Meisner Herbarium at the New York Botanical Garden.

PETREA DUCKEI Moldenke, sp. nov.

Frutex scandens; ramis gracilibus minute puberulis glabrescentibus; foliis oppositis; petiolis crassis minute puberulis; laminis firme chartaceis ellipticis acutis vel breviter acuminatis integris, ad basim acutis vel obtusis, utrinque minutissime puberulis glabrescentibus scabrellis, inflorescentiis axillaribus racemiformibus; lobis calycis permarginis, in fructu late ellipticis.

Scandent shrub; branches slender, grayish, minutely puberulent, glabrescent in age, somewhat lenticellate; nodes not annulate; principal internodes 1.2--11.5 cm. long; leaves decussate-opposite; petioles stout, 3--12 mm. long, minutely puberulent, flattened above; blades firmly chartaceous, stiff, rather uniformly gray-green on both surfaces, somewhat shiny above, elliptic, 10.5--16 cm. long, 4.3--8 cm. wide, abruptly acute or short-acuminate at apex (the very point often obtuse), entire, acute or rounded at base, very minutely puberulent and scabrellous on both surfaces, glabrescent and merely punctate in age, the immature blades very thin-membranous and nigrescent in drying; midrib rather stout at base, rapidly diminishing in size as the apex is approached, prominent on both surfaces; secondaries very slender, 9--15 per side, prominulous above, sharply prominent beneath; vein and veinlet reticulation abundant, prominulous on both surfaces, the tertiaries sharply prominent beneath; inflorescence axillary, racemiform, 14--25 cm. long, rather loosely many-flowered; rachis slender, minutely puberulent; pedicels slender, 2--5 mm. long, elongate to 9 mm. in fruit, minutely puberulent; calyx subtended by 1--3 foliaceous prophylla, which are thin-membranous, elliptic, venose, 5--6 mm. long, 3--4 mm. wide, sharply acute or attenuate-acuminate at apex; fruiting-calyx indurated, its tube 6--7 mm. long, 5--7 mm. wide at apex, very minutely puberulent, its lobes greatly enlarged, broadly elliptic, to about 13 mm. long and 12 mm. wide, pinnately venose, very minutely and obscurely puberulent, abruptly acute or obtuse at apex.

The type of this species was collected by Adolfo Ducke [Herb. Jard. Bot. Rio de Janeiro 22,542] -- in whose honor it is named -- on inundated shores at Paraná de Anavilhana, on the lower Rio Negro, Amazonas, Brazil, on July 24, 1939, and is deposited in the Britton Herbarium at the New York

Botanical Garden. The species is obviously closely related to P. insignis Schau.

STACHYTARPHETA AUSTRALIS Moldenke, Prelim. Alph. List Invalid Names 42, hyponym (1940), sp. nov.

Fruticulus; ramis gracilibus obtuse tetragonis glabrescentibus; ramulis gracilibus plusminus breviter pubescentibus; foliis oppositis; petiolis gracilibus adpressopubescentibus; laminis chartaceis ellipticis acutis argute serratis, ad basim cuneato-attenuatis, supra dense puberulis scabrellis, subtus breviter adpresso-pubescentibus; spicis dense multifloris ubique plusminus pilosis, floribus in rhachidem non valde immersis.

Shrubby; branches slender, rather obtusely tetragonal, glabrous or subglabrate in age, light-gray; branchlets very slender, brownish, more or less densely short-pubescent; nodes not annulate; principal internodes 1--5.5 cm. long; leaves decussate-opposite, small; petioles very slender, 3--8 mm. long, appressed-pubescent; blades chartaceous, brunnescens above in drying, somewhat lighter beneath, elliptic, 1.5--4.5 cm. long, 1--2 cm. wide, acute at apex, regularly serrate from almost the base to the apex with sharply acute small antrorse teeth, cuneate-attenuate at base and prolonged into the petiole, densely puberulent and scabrellous above, appressed-pubescent beneath with short hair often more dense on the larger venation; midrib slender, plane or impressed above, prominulous beneath; secondaries very slender, 4--6 per side, arcuate-ascending, plane or impressed above, prominulous beneath; veinlet reticulation indiscernible above, usually obscure beneath; inflorescence spicate, terminal, to about 20 cm. long, densely many-flowered; rachis very slender, more or less densely whitish-pilose; bractlets lanceolate, about 5 mm. long, scarious-margined, long-attenuate, more or less pilosulous-ciliate; flowers not deeply imbedded in the rachis.

The type of this species was collected by Svhreiter [Herb. Mus. Argent. Cienc. Nat. 26/1347] at Tartagal, in the department of Crán, Salta, Argentina, on September 29, 1925, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is common in southern South America and is known from many localities in Brazil, Paraguay, Uruguay, and Argentina, as well as in Hawaii and Java.

STACHYTARPHETA AZUREA Moldenke, sp. nov.

Fruticulus (?); foliis approximatis ellipticis sessilibus, ad apicem rotundatis, ad basim cuneatis serratis subrevolutis glabratiss vel minute puberulis; inflorescentiis terminalibus elongatis spicatis longissime pedunculatis densissime multifloris.

Shrubby (?); stems and branches not seen; uppermost leaves approximate, the members of the pair about 3 cm. apart, sessile, broadly elliptic, firmly chartaceous, 9--10 cm. long, 4--5 cm. wide, rounded at apex, cuneate to the clasping base, regularly serrate from below the middle to the apex with rather bluntish teeth and subrevolute, glabrous or minutely puberulent on both surfaces; inflorescence terminal, spicate, elongate, long-pedunculate; peduncles stout, about 19 cm. long, glabrate or minutely puberulent; floriferous portion of the spike rather stout, 28--29 cm. long or longer, about 1 cm. in diameter, very densely many-flowered, the flowers closely overlapping; rachis excavated; bractlets lanceolate, about 1 cm. long, long-aristate at apex, glabrate or minutely puberulent; corollas blue.

The type of this species was collected by Frederico Carlos Hoehne [Comissão Rondon no. 692] at Porto Esperidião, Mattogrosso, Brazil, in November, 1908, and is deposited in the herbarium of the Instituto Biológico de Defesa Agrícola e Animal at São Paulo.

STACHYTARPHETA BOLDINGHII Moldenke, sp. nov.

Fruticulus; ramulis subteretibus obscure puberulis; foliis oppositis sessilibus; laminis ellipticis, ad apicem rotundatis, ad basim cuneatis, marginibus regulariter serratis, supra glabratis, subtus minute puberulis et dense punctatis; inflorescentiis terminalibus spicatis elongatis densissime multifloris; floribus imbricatis; rhachide profunde excavato; bracteolis anguste ellipticis longe aristulatis glabris.

Shrubby; branchlets subterete, obscurely puberulent; nodes not annulate; leaves opposite or subopposite, sessile; blades chartaceous, somewhat lighter beneath, elliptic, the uppermost ones 1.5--2.5 cm. long, 0.7--1.5 cm. wide, rounded at apex, cuneate at base, regularly serrate from the widest part to the apex with acute or bluntish teeth, minutely strigillose or subglabrate above, minutely puberulent and densely punctulate beneath; midrib and the 2 or 3 pairs of secondaries very slender, subimpressed above, prominulous beneath; veinlet reticulation obscure or indiscernible on both surfaces; inflorescence terminal, spicate, elongate, to 37 cm. long, very densely many-flowered, the flowers closely imbricate and deeply sunken in the rachis; rachis rather stout, about 3 mm. wide, glabrous, deeply excavated during and after anthesis; bractlets large, abundant, conspicuous, narrow-elliptic, about 7 mm. long and 1.5 mm. wide, long-aristulate at apex, scarious in a wide band along the margins, glabrous; corolla-tube about 1 cm. long.

The type of this species was collected by Isaac Boldingh (no. 6352) -- in whose honor it is named -- on the island of

Aruba in 1909 or 1910 and is deposited in the Britton Herbarium at the New York Botanical Garden.

STACHYTARPHETA ELATIOR var. JENMANI Moldenke, Suppl. List
Common Names 7, nom. nud. (1940), var. nov.

Haec varietas a forma typica speciei recedit foliis utrinque plusminus hirsutis.

This variety differs from the typical form of the species in having both surfaces of its leaf-blades more or less short-hirsute, sometimes rather densely so, instead of glabrous. The stems and branches are sometimes also more or less hirsute.

The type was collected by George Samuel Jenman (no. 5542) -- in whose honor it is named -- at Muinatta on the Rupununi River, British Guiana, in October, 1889, and is deposited in the Columbia University Herbarium at the New York Botanical Garden. It is known also from Quariço, Venezuela, and reminds one of S. Calderonii Moldenke from Central America and S. pycnodonta Urb. from the West Indies. The corollas are described as purple. A vernacular name is "esponjilla".

STACHYTARPHETA MAXIMILIANI var. CILIARIS Moldenke, var. nov.

Haec varietas a forma typica speciei recedit rhachide calycibusque sparsissime pilosis et bracteolis tantum sparsiuscule ciliatis.

This variety differs from the typical form of the species in having the rachis and calyxes very sparsely pilose with short and widely scattered obscure whitish hairs and the bractlets glabrous except for the sparsely and irregularly ciliate margins.

The type was collected by Lyman Bradford Smith (no. 1420) along a path on the brook trail between Faineiras and Jardim Botânico, at an altitude of 100--400 m., Rio de Janeiro, Federal District, Brazil, on December 4, 1928, and is deposited in the Britton Herbarium at the New York Botanical Garden

STACHYTARPHETA MEXIAE Moldenke, sp. nov.

Fruticulus; ramis ramulisque obtuse tetragonis crassiusculis densissime sordido-hirsutulis; foliis oppositis; petiolis brevibus densissime sordido-hirsutulis; laminis chartaceis ovatis acutis regulariter serratis, ad basim rotundatis, supra dense velutinoso-pubescentibus, subtus densissime sordido- vel canescento-tomentosis; spicis abbreviatis terminalibus densissime multifloris ubique densissime albidohirsutulis; bracteolis anguste lanceolatis elongatis.

Shrubby, to 3.3 m. tall, with loosely spreading branches; branches and bractlets rather stoutish, obtusely tetragonal, very densely hirsutulous with sordid-gray or brownish hairs; nodes not annulate; principal internodes 3--7 cm.

long; leaves opposite; petioles short, 5--9 mm. long, very densely sordid-hirsutulous; blades chartaceous, dark-green above, grayish beneath, ovate, 2--5 cm. long, 1.5--3 cm. wide, acute at apex, regularly serrate from base to apex with rather small acute teeth, rounded at base or often slightly prolonged into the petiole at the middle, densely velutinous-pubescent above with more or less appressed and forward-pointing hairs, very densely sordid- or whitish-tomentose beneath; midrib slender, plane above, prominent beneath; secondaries slender, plane above, 4--7 per side, ascending, slightly arcuate, prominent beneath; veinlet reticulation indiscernible above, plain beneath; inflorescence terminal, spicate; spikes sessile, short, 5--9 cm. long, stout (about 1.5 cm. wide), very densely many-flowered; rachis very densely canescent-hirsutulous; bractlets dense, conspicuous, very narrowly lanceolate, elongate, 10--15 mm. long, densely canescent-hirsutulous, attenuate at apex; corolla bright-blue, about 2 cm. long.

The type of this species was collected by Ynes Mexia (no. 5824) -- in whose honor it is named -- on damp ground in the edge of a tangle on an overgrown slope at Christais, Diamantina, at an altitude of 1160 m., Minas Geraes, Brazil, on May 13, 1931, and is deposited in the Britton Herbarium at the New York Botanical Garden.

STACHYTARPHETA PERUVIANA Moldenke, sp. nov.

Herba perennis; ramulis gracilibus glabratiss nitidis; foliis membranaceis ovatis acutis serratis, ad basim longe acuminatis, utrinque glabris nitidis; spicis terminalibus elongatis pergracilibus ubique glabris.

Perennial herb, to about 1 m. tall; branches very slender, glabrous, shiny, obtusely tetragonal, stramineous; nodes not annulate; principal internodes 5.5--11.5 cm. long; leaves decussate-opposite; petioles slender, indistinct, winged, about 1 cm. long, glabrous; blades thin-membranous, uniformly bright-green and shiny on both surfaces, ovate, 8--10 cm. long, 4--5.5 cm. wide, acute at apex, rather uniformly and coarsely serrate from almost the base of the expanded portion to the apex with broadly triangular subacute and minutely apiculate teeth, very long-acuminate at base and indistinguishably attenuate into the petiole, glabrous on both surfaces; midrib slender, plane above, flattened and hardly prominent beneath; secondaries very slender, 5--7 per side, ascending, not much arcuate, plane on both surfaces; veinlet reticulation sparse, obscure above, plane beneath; inflorescence terminal, spicate; peduncles very abbreviated or obsolete, glabrous; rachis very slender, glabrous, 25--30 cm. long; bractlets lanceolate, about 4 mm. long, shorter than the calyx, long-attenuate at apex, scari-

ous-margined near the base, glabrous; fruiting-calyx rather deeply impressed in the excavated rachis; corolla pinkish-blue, paler at the center within, its tube about 7 mm. long, extremely slender, its limb about 4 mm. wide.

The type of this distinctive species was collected by Ellsworth Paine Killip and Albert Charles Smith (no. 22853), at the edge of a dense forest along the beach, at an altitude of 400 m., near Kimpitiriki, in the Río Apurímac valley, Ayacucho, Peru, on May 10, 1929, and is deposited in the herbarium of the Field Museum at Chicago.

STACHYTARHETA SPRUCEI Moldenke, sp. nov.

Fruticulus; ramulis acute tetragonis puberulis; foliis oppositis; petiolis gracilibus marginatis canaliculatis puberulis; laminis tenuiter chartaceis brunnescentibus ovato-ellipticis acutis vel brevissime acuminatis regulariter serrulatis, ad basim acuminatis, supra sparse strigillosis scabrellis, subtus densissime breviterque pubescentibus vel velutinosus; inflorescentiis terminalibus spicatis breviter pedunculatis; spicis densissime multifloris elongatis ubique dense puberulis; bracteolis anguste lanceolatis, ad apicem longe setulosus.

Shrubby; branchlets acutely tetragonal, densely puberulent; nodes obscurely annulate with a longer band of pubescence; leaves opposite; petioles slender, 1.2--1.5 cm. long, margined, deeply canaliculate above, densely puberulent; blades thin-chartaceous, brunnescent in drying, ovate-elliptic, 4.5--10 cm. long, 2--5 cm. wide, acute or very short-acuminate at apex, regularly serrulate from below the middle to the apex with very much appressed apiculate teeth, acuminate at base, sparsely strigillose and scabrellous above, very densely short-pubescent or velutinous beneath; midrib slender, plane above, prominulous beneath; secondaries slender, 5--8 per side, arcuate-ascending, plane above, prominulous above; veinlet reticulation obscure or indiscernible above, plain beneath; inflorescence terminal, spicate; peduncles short, about 2.5 cm. long, densely puberulent; rachis medium-slender, not excavated, densely puberulent; floriferous portion of the spikes very densely many-flowered, to 22 cm. long, about 1 cm. wide, the flowers densely imbricate; bractlets narrow-lanceolate, about 10 mm. long, long-setulose at apex, densely puberulent, ciliolate along the margins; corolla-tube about 1.5 cm. long.

The type of this species was collected by Richard Spruce (no. 3631) near Maypures, on the Orinoco River, Vichada, Colombia, in June, 1854, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is named in honor of its distinguished and famous original collector, whose name is so indelibly associated with the

natural history of South America.

STACHYTARPHETA STRAMINEA Moldenke, sp. nov.

Subligneous herb; stems more or less tetragonal, flattened at the nodes, rather densely puberulent, glabrescent in age; nodes not annulate; branches similar, slender, densely puberulent; principal internodes 3.5--6.5 cm. long; leaves decussate-opposite; petioles 0.6--2 cm. long, broadly alate, sparsely pilosulous-puberulent; blades thin-chartaceous, ovate-elliptic or ovate, 3--5 cm. long, 1.8--3 cm. wide, acute at apex, abruptly acuminate into the petiole at base, regularly serrate except at the very base with broadly triangular apiculate teeth, very minutely puberulent on both surfaces with obscure and scattered hairs on the lamina, more densely so on the larger venation; midrib slender, plane above, very slightly prominulous beneath; secondaries slender, 3--6 per side, ascending, plane on both surfaces, arcuately joined near the margins; veinlet reticulation obscure or plane on both surfaces; spikes terminal, 8--26 cm. long, slender, many-flowered, erect; peduncles very short, usually about 1 cm. long, canescent-puberulent; rachis slender, excavated, densely or sparsely canescent-puberulent; flowers overlapping, closely appressed; bractlets lanceolate, about 5 mm. long, about 0.75 mm. wide at base, long-attenuate to the setaceous apex, glabrous, usually stramineous, scarious-margined on the lowest $1/3$; calyx 4--5 mm. long, stramineous, glabrous; corolla small, 8--10 mm. long.

Herba sublignosa; ramis densiuscule puberulis glabrescentibus; petiolis late alatis sparse pilosulo-puberulis; laminis ovatis vel ovato-ellipticis acutis, ad basim abrupte acuminatis serratis utrinque minute puberulis; bracteolis lanceolatis setaceo-attenuatis glabris stramineis.

The type of this species was collected by José Cuatrecasas (no. 2627) somewhere in Colombia and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is apparently closely related to the common and widely distributed *S. cayennensis* (L. C. Rich.) Vahl, from which its larger bractlets quickly distinguish it.

STACHYTARPHETA SUBULATA Moldenke, sp. nov.

Herba (?); ramulis gracillimis glabris; foliis oppositis oblongis, ad apicem obtusis vel subacutis, ad basim longe cuneato-attenuatis, supra basim regulariter serratis, utrinque glabris; petiolis obscuris vel alatis; inflorescentiis terminalibus spicatis gracillimis laxae multifloris ubique glabris.

Perennial herb (?); branchlets very slender, obtusely tetragonal or subterete, glabrate; nodes annulate; principal internodes about 5 cm. long; leaves decussate-opposite, usu-

ally with some smaller ones on a very much abbreviated twig in their axils; petioles indistinct, merging into the leaf-base, broadly alate, glabrate; blades membranous, oblong, rather uniformly green on both surfaces, 5--7 cm. long, 1--2 cm. wide, obtuse or subacute at apex, long-cuneate and attenuate at base, regularly serrate along the margins except on the basal acumination, glabrate on both surfaces; inflorescence terminal, spicate, sessile, elongate, very slender, laxly many-flowered; rachis very slender, shallowly excavated, glabrate; flowers barely imbricate; bractlets linear, about 5 mm. long, subulate-setaceous at apex, glabrate.

The type of this species was collected by Jacques Samuel Blanchet (no. 3139a) in Bahia, Brazil, in or before 1840, and is deposited in the herbarium of the Field Museum at Chicago. It was identified as S. dichotoma (Ruiz & Pav.) Vahl and cited under this name by Schauer in De Candolle's "Prodromus". S. dichotoma, however, is synonymous with S. cayennensis and Blanchet's plant is not that species.

STACHYTARHETA TRINITENSIS Moldenke, sp. nov.

Herba perennis; ramis gracilibus obtuse tetragonis densiuscule adpresso-puberulis; foliis oppositis griseo-viridibus; petiolis indistinctis alatis; laminis ellipticis abrupte acutis vel obtusis serratis, ad basim longe attenuato-acuminatis, supra sparsissime albedo-pilosis, subtus in venis majoribus puberulo-pilosis; spicis terminalibus elongatis mediocriter gracilibus; rhachide plusminus adpresso-piloso glabrescente; bracteolis magnis late ellipticis vel oblanceolatis ciliatis, ad apicem scarioso-marginatis.

Perennial herb; branches slender, obtusely tetragonal, rather densely appressed-puberulent with whitish hairs, more densely so at the apex and on youngest parts; nodes not annulate; principal internodes 3--6 cm. long; leaves decussate-opposite, usually with a fascicle of smaller ones on very much abbreviated twigs in their axils; petioles not distinct, a few mm. long, winged and merging into the leaf-base, puberulent; blades thin-chartaceous or membranous, uniformly gray-green on both surfaces, elliptic, 3.5--8.5 cm. long, 1.7--3.7 cm. wide, acute or obtuse at apex, rather uniformly serrate from almost the base of the expanded portion to the apex, long-acuminate at base and attenuate into the petiole, very sparsely white-pilose above, puberulent-pilose beneath especially along the larger venation; midrib slender, plane above, subprominulous beneath; secondaries very slender, about 5 per side, arcuate-ascending, plane above, very slightly prominulous beneath; veinlet reticulation sparse, indiscernible above, mostly obscure beneath; inflorescence terminal, spicate, elongate; peduncles greatly abbreviated, about 2 cm. long, densely appressed-pubescent with short white

hairs; rachis medium-slender, deeply excavated in age, more or less appressed-pilose, more densely so toward the base, glabrescent in age; bractlets large, broadly elliptic or oblanceolate, 7--9 mm. long, 2--3 mm. wide, long-aristate-acuminate at apex, glabrous except for the ciliate margins, scarious and more or less lacerate along the margins from the widest part to the base of the terminal aristula.

The type of this species was collected by Walter Elias Broadway at Tabaquite, Trinidad, on September 20, 1918, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is also known from Margarita Island, Venezuela.

STACHYTARPHETA WEBERBAUERI Moldenke, sp. nov.

Fruticulus; ramis ramulisque acutissime tetragonis subalatis densissime puberulis; nodis annulatis; foliis oppositis subsessilibus; laminis ellipticis acutis vel subacutis regulariter serrulatis, ad basim longe acuminatis, utrinque dense tomentellis; inflorescentiis terminalibus spicatis elongatis densissime multifloris ubique breviter pubescentibus; rhachide excavato; bracteolis oblongo-elongatis.

Shrubby; branches and branchlets very sharply tetragonal, margined or even subulate, very densely puberulent; nodes annulate; principal internodes 1--4 cm. long; leaves opposite, sessile or subsessile; blades chartaceous, uniformly green on both surfaces or slightly lighter beneath, elliptic, 2.2--4 cm. long, 1--2 cm. wide, acute or subacute at apex, long-acuminate at base, regularly serrulate except on the basal petiole-like acumination, densely tomentellous on both surfaces; midrib slender, subimpressed above, prominent beneath; secondaries slender, 5--7 per side, subimpressed above, prominent beneath; veinlet reticulation abundant, usually subimpressed above; inflorescence terminal, spicate; peduncles 0.5--2 cm. long, sharply tetragonal or subulate, densely short-pubescent; rachis deeply excavated during and after anthesis, densely short-pubescent; floriferous portion of spike 7--25 cm. long, very densely many-flowered, 6--10 mm. wide, the flowers closely imbricate; bractlets conspicuous, oblong-elongate, about 1 cm. long, densely short-pubescent, subulate at apex; corolla about 2 cm. long.

The type of this species was collected by August Weberbauer (no. 6178) -- in whose honor it is named -- at an altitude of 1200 m., at Tabaconas on the Marañon river, Cajamarca, Peru, between 1909 and 1914, and is deposited in the Britton Herbarium at the New York Botanical Garden.

VERBENA BALLSII Moldenke, sp. nov.

Herba caespitosa, ad basim lignosa multo-ramosa; ramis

dense pubescentibus; foliis oppositis sessilibus; laminis chartaceis cuneato-obovatis trilobatis (lobis saepe trilobulatis) utrinque dense pubescentibus; inflorescentiis terminalibus magnis capitatis; capitulis globosis densissime multifloris; corollis rubellis; bracteolis linearibus elongatis dense pubescentibus.

Dense many-stemmed plants, woody at base, forming domed tufts to 1 m. across; stems simple or very sparsely branched, 15--22 cm. long, densely pubescent throughout; nodes annulate; principal internodes 1--3 cm. long; leaves opposite, sessile; blades chartaceous, cuneate-obovate, 1--3 cm. long, 1--2.3 cm. wide, rounded in outline at apex and distinctly 3-lobed (each lobe often again 3-lobed, oblong, blunt), long-cuneate to the base, densely short-pubescent with brownish or grayish often gland-tipped hairs on both surfaces, less densely so in age and then often with the pubescence beneath limited to the larger venation; midrib and secondaries impressed above, prominulous beneath; veinlet reticulation practically indiscernible on either surface; inflorescence terminal, apparently compound, but forming an extremely large and dense globular many-flowered head 3.5--5 cm. in diameter; peduncles obsolete or very short; bractlets numerous, linear, about 1 cm. long, very densely spreading-pubescent; calyx tubular, about 5 mm. long, densely spreading-pubescent with whitish gland-tipped hairs; corolla creamy-pink, sweet-scented, its tube about 1 cm. long, its limb about 6 mm. in diameter.

The type of this showy and most distinctive species was collected by Edward K. Balls (no. 6036) -- in whose honor it is named -- in the Chorrú valley, near Tilcara, at an altitude of 12,800 feet, Jujuy, Argentina, on February 13, 1939, and is deposited in the United States National Herbarium at Washington. The collector states that it grows among rocks on dry sunny exposures in shaley formations well above the moisture line and that its leaves are gray, softly hairy, loosely clothing the stems.

VERBENA CABRERAE Moldenke, sp. nov.

Herba; caulis ramisque gracilibus obtuse tetragonis adpresso-pilosis; foliis oppositis; petiolis alatis albido-strigosis; laminis tripartitis, partibus laciniatis vel pinnatifidis, laciniis acutis, utrinque strigoso-pilosis; inflorescentiis terminalibus spicatis, spicis abbreviatis congestis.

Herb; stems and branches slender, obtusely tetragonal, rather sparsely appressed-pilose with whitish hairs; more densely so toward the apex and on younger parts; nodes annulate; principal internodes 2--4 cm. long; leaves decussate-opposite, usually with several smaller ones on very much ab-

breviated twigs in their axils; petioles slender, 5--10 mm. long, winged, white-strigose; blades very thin-chartaceous, uniformly green on both surfaces, ovate in outline, 3--6 cm. long and wide, deeply 3-parted to the base, the divisions lacinate or pinnatifid, the lobes oblong and acute (often sharply so), strigose-pilose with appressed whitish hairs on both surfaces; midrib and secondaries plane or subimpressed above, prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence terminal; peduncles very slender, appressed-strigose, 2.5--4.5 cm. long; spikes abbreviated, congested, many-flowered; calyx narrow-tubular, about 9 mm. long and 1 mm. wide, densely white-strigose; corolla-tube about 12 mm. long, its limb 7--9 mm. wide, blue.

The type of this species was collected by Angel L. Cabrera (no. 4199) -- in whose honor it is named -- at Quebrada del Río Caraparí, department of Orán, Salta, Argentina, on July 15, 1937, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is known also from Tucumán and is a most distinctive species.

VERBENA OCCIDENTALIS Moldenke, sp. nov.

Herba; ramis simplicibus erectis dense hirsuto-pubescentibus, pilis griseis glanduliferis; foliis oppositis fasciculatis; petiolis obsoletis vel brevissimis et alatis; laminis chartaceis 3-partitis profunde pinnatifidis utrinque dense griseo-hirsutulis, marginibus subrevolutis.

Herb; stems simple, erect, slender, tetragonal, densely hirsute-pubescent with sordid-grayish gland-tipped hair; principal internodes 1.5--3 cm. long; leaves decussate-opposite, usually with a few smaller ones fascicled in their axils; petioles obsolete or very short and winged; blades chartaceous, uniformly gray-green on both surfaces, 3-parted almost to the winged petiole-like base, each division again deeply pinnatifid, densely hirsutulous-pubescent on both surfaces with grayish hair like that on the stems, sometimes substrigose above, the margins slightly revolute; midrib and secondaries very slender, impressed above, prominulous beneath; veinlet reticulation indiscernible on both surfaces; spike terminal, single, simple, unbranched, 7--8 or more cm. long, very densely many-flowered; peduncles slender, about 3.5 cm. long, densely hirsute-pubescent like the stems; flowers very densely imbricate (except the lowest 2 or 3, which may be arranged in a whorl somewhat separated from the rest of the spike) or more separated so as to be barely imbricate and somewhat divergent in fruit; bractlets large, linear or narrow-lanceolate, 5--8 mm. long, less than 1 mm. wide, densely hirsutulous with gland-tipped hairs like the peduncles; calyx tubular, about 8 mm. long and 2 mm. wide, 5-costate, very thin-textured between the ribs, densely hirsutulous.

ous with spreading whitish gland-tipped hairs, its rim 5-apiculate; corolla hypocrateriform, its tube about 1 cm. long.

The type of this species was collected by Andrew Mathews (no. 498) somewhere in Peru in 1834 and is deposited in the Meisner Herbarium at the New York Botanical Garden

VERBENA REINECKII Moldenke, sp. nov.

Herba; caulibus ramisque gracilibus plusminus hirsutulis et puberulis; foliis oppositis breviter petiolatis; laminis ovatis vel ovato-ellipticis profunde laciniatis vel lobatis (lobis obtusis latis), ad apicem subacutis, ad basim in petiolum cuneato-attenuatis, supra sparse scabro-pilosis, subtus in venatio hirsutulis; inflorescentiis axillaribus terminalibusque subcapitatis hirsutulis.

Herb; stems and branches slender, more or less hirsutulous and puberulent, less so in age; principal internodes 1--3 cm. long; leaves opposite; petioles very slender, to 5 mm. long and sparsely hirsutulous, or obsolete; blades chartaceous, rather uniformly bright-green on both surfaces, ovate or ovate-elliptic, 0.5--2.5 cm. long, 0.3--2 cm. wide, subacute at apex, cuneate-attenuate into the petiole at base, deeply laciniate or lobate with broad obtuse lobes, sparsely scabrous-pilose with bulbous-based hairs above, hirsutulous along the venation and margins beneath; midrib and the 2 or 3 secondaries very slender, impressed above, sharply prominent beneath; veinlet reticulation very sparse, usually obscure; inflorescence axillary and terminal, subcapitate-spicate, 8--15-flowered; peduncles slender, hirsutulous, 1--2.5 cm. long; bractlets much shorter than the calyx, lanceolate, about 4 mm. long and 1 mm. wide, hirsutulous, attenuate at apex; calyx tubular, about 9 mm. long, hirsutulous, the hairs sometimes gland-tipped; corolla-tube about 1.5 cm. long, its limb to 1 cm. in diameter.

The type of this species was collected by Eduard Martin Reineck -- in whose honor it is named -- and Josef Czermak (no. 21) on a sunny hill near Moinhos do Vento, Porto Alegre, Rio Grande do Sul, Brazil, in November, 1897, and is deposited in the herbarium of Pomona College at Claremont, California. The species has been hitherto confused with with "*Verbena chamaedryfolia* Juss.", which, however, is conspecific with *V. peruviana* (L.) Britton and is an entirely different plant with brilliant scarlet flowers and quite different foliar characters.



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PHYTOLOGIA

Designed to expedite botanical publication

VOL. I

January, 1941

No. 15

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Published by H. A. Gleason and Harold N. Moldenke
The New York Botanical Garden
Bronx Park, New York, N. Y.

Price of this number, 50 cents; per volume, \$5.00 in advance

Vol. I, No. 14, was issued November 25, 1940



THREE NEW TREES FROM TABASCO AND CAMPECHE (a)

C. L. Lundell

PITHECOLOBIUM CAMPECHENSE Lundell, sp. nov.

Arbor. Stipulae subulatae, usque ad 3 mm. longae. Petioli usque ad 2.3 cm. longi. Pinnae 1-jugae. Foliola 1-juga, oblonga, chartacea, basi barbata, apice rotundata vel emarginata. Inflorescentiae spicatae, adpresse puberulae; bractae minutae. Calyx 1--1.3 mm. longus. Corolla 4 mm. longa.

A tree 7 to 10 m. high, 30 to 60 cm. in diam., branchlets rather slender, glabrous, striate. Stipular spines minute, stout, less than 3 mm. long. Petioles up to 2.3 cm. long, often less than 1 cm. long, glabrous, slender, with a discoid apical gland. Pinnae 1 pair. Leaflets 1-pair, obliquely oblong, 2 to 4.3 cm. long, up to 1.9 cm. wide, chartaceous, barbate at base beneath, entirely glabrous otherwise, apex rounded or emarginate, both surfaces reticulate-veined. Spikes up to 4 cm. long, borne in panicles, puberulent; bractlets minute, less than half the length of calyx, persistent. Flowers sessile. Calyx appressed-puberulent, 1 to 1.3 mm. long. Corolla appressed-puberulent, 4 mm. long. Stamen-tube shortly exserted. Ovary subsessile, covered with appressed hairs.

MEXICO: Campeche, Palizada, in "swamp side forest", July 25--28, 1939, Eizi Matuda 3866 (type in the University of Michigan Herbarium); vernacular name "tinta".

From P. lanceolatum (H. & B.) Benth., to which it is allied, P. campechense differs in having minute stipular spines, much shorter flower spikes, and smaller calyx and corolla. The fruits are not known.

EUGENIA BALANCANENSIS Lundell, sp. nov.

Arbor parva, glabra. Folia petiolata, chartacea, ovato-lanceolata, apice attenuata, obtuse acuminata, basi acuta. Inflorescentiae racemosae, axillares, usque ad 1.7 cm. longae. Pedicelli usque ad 6 mm. longi. Petala oblonga.

Tree, 4 m. high, 15 cm. diam., glabrous throughout excepting the sparsely puberulent buds. Branchlets slender, compressed at first, glandular-punctate. Petioles short, canaliculate, 3 to 6 mm. long. Leaf-blades thin, chartaceous, punctate, concolorous or slightly paler beneath, ovate-lanceolate, 4 to 9.5 cm. long, 1.3 to 3.5 cm. wide, apex attenuate, obtusely acuminate, base acute, costa nearly plane above, inconspicuously elevated beneath, the main lateral veins 6 to 10 on each side, anastomosing into a submarginal vein, prominulous beneath. Inflorescence racemose, the rac-

emes axillary, solitary or fasciculate, up to 1.7 cm. long with a short rachis; the rachis and pedicels glandular-punctate. Pedicels slender, up to 6 mm. long. Calyx small, the tube subglobose, less than 1 mm. long, 4-lobed, the lobes rounded, unequal, the larger up to 1.5 mm. long, minutely ciliolate. Petals oblong, up to 3.2 mm. long, conspicuously glandular-punctate.

MEXICO: Tabasco, San Isidro near Balancan, in advanced forest, June 7--11, 1939, Eizi Matuda 3361 (type in the University of Michigan Herbarium).

EUGENIA TABASCENSIS Lundell, sp. nov.

Arbor parva, ramulis albedo-sericeis. Folia petiolata, chartacea, anguste elliptico-oblonga, apice caudato-acuminata, basi cuneata, sericea vel subglabra. Inflorescentiae racemosae, axillares, fasciculatae, usque ad 4.5 cm. longae. Pedicelli usque ad 6.5 mm. longi. Petala obovata vel elliptica, 2.6--3.4 mm. longa, ciliolata.

A small tree. Branchlets slender, whitish-sericeous, at first compressed and sulcate at the nodes, reddish. Leaves attenuate at the base into short, slender, canaliculate, sparingly sericeous petioles up to 5 mm. long. Leaf-blades chartaceous, narrowly elliptic-oblong, 3 to 7.5 cm. long, 1 to 3 cm. wide, apex caudate-acuminate, the cusp obtuse, base cuneate, punctate, sparingly sericeous on both surfaces at first, at length with only a few hairs persisting along the costa, the midvein impressed above, elevated beneath, the lateral veins numerous, approximate, prominulous below, less evident above, reticulate, merging into a prominulous submarginal vein. Inflorescence densely sericeous, racemose, the racemes axillary, usually fasciculate, up to 4.5 cm. long, sessile or pedunculate, the rachis slender. Pedicels slender, up to 6.5 mm. long. Calyx whitish-sericeous, 4-lobed, the lobes sparingly puberulent on both surfaces, 1 to 1.3 mm. long. Petals obovate or elliptic, 2.6 to 3.4 mm. long, ciliolate, glabrous otherwise, punctate; receptacle puberulent.

MEXICO: Tabasco, Boca Cerro on the Usumacinta River above Tenosique, on limestone, July 1--5, 1939, Eizi Matuda 3361 (type in the University of Michigan Herbarium).

The species is related to *Eugenia yucatanensis* Standl. and *E. cocquericotensis* Lundell.

(a) Papers from the University of Michigan Herbarium.

NEW SOUTH AMERICAN VERBENACEAE

Harold N. Moldenke

DURANTA REPENS var. *MICROPHYLLA* (Desf.) Moldenke, comb. nov.

Duranta microphylla Desf., Cat. Hort. Paris, ed. 3, 392.
1829.

JUNELLIA STRAGULOIDES Moldenke, sp. nov.

Fruticulus nanus caespitosus; caulis abbreviatis lignosis ramis gracilibus abbreviatis puberulis; internodiis valde abbreviatis; foliis oppositis rigidis tripartitis amplexi-caulibus, lobis patentibus puberulis argute acutis integris; inflorescentiis unifloris; corollis rubellis.

Diminutive alpine shrub, forming small rosettes, pressed together into dense wood-hard cushions to 1 m. in diameter, usually flattened, sometimes mounding slightly in the center; stems abbreviated, woody, prostrate; branches slender, abbreviated, prostrate or decumbent, puberulent; internodes greatly abbreviated; leaves opposite, rigid, uniformly yellow-green on both surfaces, tri-partite, clasping at base, the divisions oblong, 2--5 mm. long, sharply acute at apex, divergent, puberulent, entire, usually obscurely veined; inflorescence reduced to solitary axillary flowers, borne in great abundance; calyx cupuliform, about 2 mm. long, white-puberulent or strigillose; corolla pale-pink, its tube 4--5 mm. long, its limb about 4 mm. in diameter.

The type of this species was collected by Edward K. Balls (no. 6000) in screen-like open patches among upland grasses on rolling non-calcareous soil in valleys above San Gregorio, Tilcara, at an altitude of 14,000 feet, Jujuy, Argentina, on February 11, 1939, and is deposited in the United States National Herbarium at Washington.

VERBENA PARAGUARIENSIS Moldenke, sp. nov.

Herba; caulibus simplicibus erectis albedo-strigosis; foliis oppositis sessilibus ad caulem arcte adpressis; laminis lanceolatis attenuatis acutis integris subrevolutis, ad basin rotundatis vel obtusis, utrinque strigosis; inflorescentiis terminalibus spicatis multifloris, floribus alternis imbricatis.

Herb, to 6 dm. tall; stems usually simple and erect, strigose with closely appressed whitish antrorse hairs; leaves decussate-opposite, numerous, appressed to the stems, sessile; blades lanceolate, 6--23 mm. long, 1--3 mm. wide, attenuate above to the rather sharply acute apex, rounded or obtuse at base, entire and usually subrevolute along the

margins, strigose on both surfaces like the stems; inflorescence terminal, spicate, terminating the stems, solitary 10--20 cm. long, about 1 cm. wide throughout, many-flowered, the flowers alternate, imbricate, somewhat spreading; rachis slender, more or less flexuous, strigose like the stems; bractlets 2--3 mm. long, closely appressed to the calyx, strigose.

The type of this peculiar species was collected by Teodoro Rojas (Hassler 9751) on high plateau and declivities, Sierra de Amambay, Paraguay, in December, 1907, and is deposited in the Delessert Herbarium of the Conservatoire Botanique at Geneva.

VITEX APPUNI Moldenke, Geogr. Distrib. 21 & 26, nom. nud. (1939), sp. nov.

Frutex vel arbor; ramulis sarmentisque obtuse tetragonis vel subteretibus medullosis dense breviterque pubescentibus subglabrescentibus; foliis 3- vel 5-foliolatis, plerumque 3-foliolatis; petiolis gracillimis dense breviterque pubescentibus; foliolis sessilibus submembranaceis ellipticis vel subobovato-ellipticis, ad basin et apicem acuminatis, integris vel crasse serratis, supra dense puberulis, subtus densissime pubescentibus vel tomentellis; inflorescentiis axillaribus capitatis dense multifloris.

Shrub or tree; branchlets and twigs medium or slender, obtusely tetragonal or subterete, medullose, gray-brown, the youngest shoots densely short-pubescent with cinereous pubescence, the older ones sparsely puberulent or subglabrate; leaf-scars on older wood rather large and semi-circular, usually with elevated margins; nodes not annulate; principal internodes 1.5--6 cm. long or more abbreviated on short axillary twigs; leaves decussate-opposite, 3- or 5-foliolate, mostly 3-foliolate; petioles very slender, 1.2--6 cm. long, convex beneath, flattened above, densely short-pubescent like the young twigs; leaflets, when 3, subequal in size or the lateral ones slightly smaller, when 5, the 2 lowermost often much reduced. all sessile or the central ones only subsessile; leaflet-blades submembranous, rather dark-green above, much lighter beneath, the central one elliptic or subobovate-elliptic, 3--9 cm. long, 1.5--3 cm. wide, acuminate at apex and base (the lateral ones usually acute at base), entire or coarsely and irregularly serrate with rather few blunt teeth, densely puberulent above, becoming much more sparsely so in age, very densely short-pubescent or tomentellous beneath; midrib very slender, subimpressed above, prominulous beneath; secondaries very slender, 9--11 per side, flat (and often inconspicuous) or subimpressed above, prominulous beneath, arcuate-ascending, not plainly anastomosing; vein and veinlet reticulation mostly obscure

on both surfaces; inflorescence axillary, cymose, capitate, 3--7 cm. long, 1--2.5 cm. wide, densely many-flowered; peduncles slender, 2--5.5 cm. long, more sparsely short-pubescent than the young twigs, flattened; pedicels very slender, 1--3 mm. long; bracts none; bractlets few, linear, 2--4 mm. long, densely pubescent; prophylla minute, setaceous, 1 mm. long or less, densely pubescent.

The type of this species was collected by Carl Friedrich Appun (no. 1885) -- in whose honor it is named -- probably on or near Mount Roraima, British Guiana, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species is known also from Amazonas, Brazil.

VITEX FROESII Moldenke, sp. nov.

Arbor; ramulis glabrescentibus; hornotinis crassis densissime villosa-tomentosis, pilis fulvis; petiolis crassis densissime fulvo-villosis; foliolis 3 sessilibus subcoriaceis late ellipticis vel obovatis, ad apicem rotundatis vel subcuspidatis integris utrinque dense villosa-velutinis; inflorescentiis glomeratis sessilibus bracteosis densissime longeque villosis.

Tree, to 15 m. tall; trunk to 18 cm. in diameter; branchlets medium-stout, gray, obtusely tetragonal, glabrescent; young twigs stout, obtusely tetragonal, very densely villous-tomentose with long fulvous hairs; buds densely long-villous; nodes somewhat enlarged and ampliate, not annulate; principal internodes 2.5--8 cm. long; leaves decussate-opposite, trifoliolate; petioles stout, 4.5--11 cm. long, very densely villous-tomentose with fulvous hair similar to that on the twigs; petiolules absent; leaflets 3, sessile, subcoriaceous, broadly elliptic or obovate, lighter beneath, the central one 8--18.5 cm. long, 5--12.3 cm. wide, rounded or very slightly cuspidate at apex, entire, slightly undulate or sinuate, cuneate and symmetrical at base, densely villous-velutinous on both surfaces, more conspicuously so beneath, with flavescent hairs; midrib stoutish, prominulous (except toward the apex) above, very prominent beneath; secondaries slender, 10--15 per side, ascending, not much arcuate (except toward the margins), close together, joined in many loops at the margins, very slightly impressed above, prominent beneath; veinlet reticulation abundant, slightly impressed above, prominulous beneath; lateral leaflets similar, practically the same size as the central one or slightly smaller, but usually asymmetric at base or asymmetric throughout, often rounded or subtruncate at base, or the outer half broadly rounded and the inner half cuneate at base; inflorescence glomerate, sessile, bracteose, very densely long-villous with fulvous hairs; bracts numerous, lanceolate, 1.8--2.3 cm. long and

2--5 mm. wide at base, sessile, densely villous on the outer surface, concave from within, an opposite pair closely appressed to the base of the calyx and alternate with its lips; calyx tubular, about 1.8 cm. long and 5 mm. wide, distinctly 2-lipped, one lip 2-lobed at apex, the other 3-lobed, the lobes 1--3 mm. long, slender, triangular-acuminate, the sinuses between the lips about 5 mm. deep, in fruit greatly enlarged and splitting to the base, the 2 halves broadly ovate-elliptic, to 2.5 cm. long and 1.7 cm. wide, the lobes 5--7 mm. long; corolla and fruit not seen.

The type of this most remarkable and distinctive species was collected by R. Fróes (no. 11,660) -- in whose honor it is named -- on high land in a high forest, terra firma along the Rio Pindare, Rapoza Monção, Maranhão, Brazil, on December 15, 1937, and is deposited in the Britton Herbarium at the New York Botanical Garden.

VITEX GUIANENSIS Moldenke, Alph. List Common Names 14, nom. nud. (1939); Geogr. Distrib. 21, nom. nud. (1939), sp. nov.

Arbor alta; ramulis gracilibus obtuse tetragonis dense breviterque rufescento-tomentosis; foliis 5-foliolatis; petiolis gracillimis dense rufescento-tomentosis; foliolis stipitatis ellipticis acutis vel breviter acuminatis integris vel obscure repando-undulatis, ad basin acutis vel breviter acuminatis, supra sparse ferrugineo-hirsutulis, subtus dense hirsutulis; inflorescentiis axillaribus abbreviatis.

Tree, to 90 feet tall, slightly buttressed, inclined to be fluted, with pale-gray thin papery bark; branchlets rather slender, obtusely tetragonal, densely tomentose with rufescent rather short hairs, the tomentum wearing off in age; nodes annulate, flattened; principal internodes 2--6 cm. long; leaf-scars rather large and prominent; leaves deciduous, strongly scented, 5-foliolate; petioles very slender, 4--10 (---18.5 ?) cm. long, densely rufescent-tomentose (in age stout and glabrous ? -- one old petiole, without leaflets, is mounted on an isotype, but may not belong to this species); leaflets thin-chartaceous or submembranous, dark-green above, slightly lighter beneath, unequal, the 2 lowermost mostly considerably smaller than the rest, short-petiolulate; petiolules very slender, 1.5--4 mm. long, densely rufescent-tomentose; central leaflet-blades elliptic, 8.6--15.5 cm. long, 3.1--6.8 cm. wide, acute or short-acuminate at apex, entire or obscurely repand-undulate, acute or short-acuminate at base, sparsely hirsutulous above with scattered ferruginous hairs, very densely so along the midrib and larger veins, somewhat more densely hirsutulous beneath, especially along the larger venation; midrib slender, flat above, prominent beneath; secondaries very slender, 10--

15 per side, arcuate-ascending, mostly flat and rather obscure above, prominulous beneath, anastomosing in many loops (indistinctly) at the margins; veinlet reticulation indiscernible above, the larger portions slightly prominulous beneath; inflorescence axillary; cymes abbreviated, much shorter than the petioles; peduncles, pedicels, and young shoots covered with a brown felt of hairs; flowers in erect umbelloid cymes; calyx pale-green, erecto-patent; corolla bilabiate, the upper lip composed of 2 white reflexed lobes, the lower lip composed of 3 blue-purple lobes, with a patch of pale-yellow hairs at the base of the central lobe, reflexed; corolla-tube blue-striate; filaments up to $1/4$ longer than the corolla-tube, flushed with purple; anthers blue.

The type of this species was collected in baniaballi (myrtaceous) bush on the top of an Ironstone Hill where there was no uniform soil covering, but only soil pockets, British Guiana (British Guiana Forestry Department 2543), on October 28, 1937, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The native Arawak name is "hakiaballi".

VITEX KRUKOVII Moldenke, Geogr. Distrib. 27, nom. nud.

(1939), sp. nov.

Arbor; ramulis compresso-tetragonis sparsissime pilosis; sarmentis densissime et valde conspicue villosa-tomentosis, pilis fulvis; foliis 5-foliolatis; petiolis gracilibus densissime villosa-tomentosis; foliolis stipitatis late ellipticis vel subobovatis breviter acuminatis integris, ad basin acuminatis vel cuneatis, supra in costa villosis, subtus in venis majoribus fulvo-villosis; inflorescentiis axillaribus capitatis 2- vel 3-floribus.

Tree, about 50 feet tall; branchlets dark, flattened-tetragonal, very sparsely pilose with scattered hairs; twigs slender, extremely densely and conspicuously villous-tomentose with long fulvous hairs; leaves decussate-opposite, 5-foliolate; petioles slender, 6.5--10 cm. long, rounded beneath, flat above, very densely villous-tomentose with fulvous hairs, slightly ampliate at apex; leaflets mostly symmetrical, the central noticeably larger than the two lowest and borne on longer petiolules, young leaves with all the petiolules obscure; petiolules 3--11 mm. long, very densely villous-tomentose with fulvous hairs; central leaflet-blades broadly elliptic or slightly obovate, 14--19 cm. long, 6.5--9 cm. wide, short-acuminate at apex, entire, acuminate or cuneate at base, villous along the midrib above and along the midrib and secondaries beneath, with long fulvous hairs, often also very sparsely so on the veinlet-reticulation beneath, basal leaflets similar but smaller, 6--9.5 cm. long, 2.8--4.5 cm. wide; midrib somewhat impress-

ed above, very prominent beneath; secondaries 10--15 on each side, close together, rather straight, abruptly arcuate-joined near the margins; inflorescence axillary, solitary, opposite, cymose; cymes capitate, apparently 2- or 3-flowered, 9--9.5 cm. long; peduncles slender, erect, divergent, 7--8 cm. long, densely villous-tomentose with long fulvous hairs (1--2 mm. long, like on the twigs and petioles), apparently bearing a few bractlets at the apex; fruiting-pedicles obsolete; fruiting-calyx cupuliform, large, about 9 mm. long and 12 mm. wide, densely strigose-villous with closely appressed rather long flavescent hairs, its rim deeply 5-lobed, the lobes triangular-ovate, long, rather narrow, acute, erect; fruit ellipsoid or rounded, about 14 mm. long and wide, extremely densely and beautifully villous with long (2--3 mm.) fulvous or brown glistening hairs, all forward-pointing and appressed.

The type of this handsome species was collected by Boris Alexander Krukoff (no. 6279) -- in whose honor it is named -- on "varzea" land near Tres Casas, Municipality Humayta, Amazonas, Brazil, between September 14 and October 11, 1934, and is deposited in the Britton Herbarium at the New York Botanical Garden.

VITEX MARTII Moldenke, Geogr. Distrib. 27, nom. nud. (1939), sp. nov.

Arbor; ramis ramulisque gracilibus obtuse tetragonis dense puberulis glabrescentibus; sarmentis gracillimis abbreviatis densissime fulvo- vel ferrugineo-puberulis; foliis 3--5-foliolatis; petiolis gracillimis dense breviterque fulvo- vel flavescento-pubescentibus; foliolis sessilibus vel subsessilibus chartaceis ellipticis argute acutis integris, ad basin acutis, supra leviter puberulis, subtus densiuscule puberulis; inflorescentiis axillaribus capitatis dense multifloris.

Tree; branches and branchlets slender, grayish, obtusely tetragonal, somewhat swollen at the nodes, densely puberulent with extremely fine matted grayish puberulence, becoming subglabrate in age, not noticeably lenticellate; twigs very slender, mostly abbreviated, very densely puberulent with fulvous or ferruginous hairs; nodes not annulate; principal internodes 1--2.8 cm. long or on young twigs extremely abbreviated (to 1 mm.); leaf-scars large, corky, prominent; leaves decussate-opposite, 3--5-foliolate; petioles very slender, 0.6--2.8 cm. long (at anthesis), densely short-pubescent with flavescent or fulvous hairs, flattened above, not noticeably ampliate at base; leaflets sessile or subsessile (at anthesis); leaflet-blades (at anthesis) chartaceous, rather uniformly bright-green on both surfaces or somewhat lighter beneath, the terminal one elliptic, 1.5--

3.5 cm. long, 6--11.5 mm. wide, sharply acute at apex, entire, acute at base, finely puberulent above, somewhat more densely so beneath, mostly conduplicate and reflexed; midrib very slender, plane above, slightly prominulous beneath; secondaries very slender, about 10 per side, ascending, short, not much arcuate; vein and veinlet reticulation very fine, indiscernible above, plane beneath; inflorescence axillary, capitate, 2--5 cm. long, 6--15 mm. wide, densely many-flowered, not brachiate, appearing before or with the leaves; peduncles very slender, 1.6--4 cm. long, densely short-pubescent or puberulent with flavescent or fulvous hairs.

The type of this species was collected by Carl Friedrich Philipp von Martius in the woods of the Catingas along the Rio São Francisco Salgado, Minas Geraes, Brazil, and is deposited in the herbarium of the Botanisches Museum at Munich. The species is known also from Bahia.

VITEX POLYGAMA var. **BAKERI** Moldenke, *Alph. List Common Names* 20, nom. nud. (1939); *Geogr. Distrib.* 27 & 40, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit foliolis 5 sessilibus, ad basin longe acuminatis vel attenuatis; pilis ubique sericeo-velutinis et ferrugineis vel hirsutis.

This variety differs from the typical form of the species in its five leaflets being sessile and long-acuminate or attenuate at base, and the pubescence throughout being usually more silky-velutinous and ferruginous or hirsute.

The type was collected by Charles Fuller Baker (no. 281) -- in whose honor it is named -- in the vicinity of Pará, Pará, Brazil, on February 20, 1908, and is deposited in the herbarium of the Botanisch Museum at Utrecht. The variety is also known from Maranhão and from cultivation.

VITEX POLYGAMA var. **DUSENII** Moldenke, *Geogr. Distrib.* 27, nom. nud. (1939); *Prelim. List Invalid Names* 51, hyponym (1940), var. nov.

Haec varietas a forma typica speciei recedit bracteolis foliaceis, cymis dense congestis, lobis calycis longissimis foliaceis bracteoloideis.

This variety differs from the typical form of the species in its extremely long and foliaceous calyx-lobes, which greatly resemble the foliaceous bractlets which surround them in the dense and congested cymes.

The type was collected by Per Karl Hjalmar Dusen (no. 16,111) at the margins of primeval woods in the littoral region at Jacarehy, Paraná, Brazil, on December 13, 1914, and is deposited in the herbarium of the Naturhistoriska Riksmuseet at Stockholm. The variety is known also from Rio

de Janeiro.

VITEX POLYGAMA var. *GLAZIOVII* Moldenke, Geogr. Distrib. 27, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit lobis calycis angustissimis elongatis sublinearibus vel oblongis bracteoloideis, fructibus valde carnosus, endocarpio centrale parvo.

This variety differs from the typical form of the species in its very fleshy fruits and small central endocarp, the fleshy portion being almost 2 cm. long and wide and the stony endocarp only about 11 mm. long and 6 mm. wide. The calyx-lobes are also very narrow and elongate, sublinear or oblong, 5--10 mm. long, resembling the bractlets.

The type was collected by Auguste François Marie Glaziou (no. 5959) -- in whose honor it is named -- at Restinga de Mauá, in the Organ Mountains, Rio de Janeiro, Brazil, between 1861 and 1887, and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

VITEX POLYGAMA var. *WARMINGII* Moldenke, Geogr. Distrib. 27, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit foliis sub anthesin valde immaturis cymis aequantibus, pilis conspicue flavescensibus vel ferrugineis et velutino-sericeis.

This variety differs from the typical form of the species in its leaves being very immature at the time of flowering and equaled in length by the cymes, and the pubescence throughout being very conspicuously flavescens or ferruginous and velutinous-silky, especially on the leaves, where it is very lustrous.

The type was collected by Johannes Eugenius Bülow Warming (no. 23/967) -- in whose honor it is named -- at Lagoa Santa, Minas Geraes, Brazil, and is deposited in the herbarium of the Universitetets Botanisk Museum at Copenhagen.

VITEX SCHOMBURGKIANA var. *GRANDIFLORA* Moldenke, Geogr. Distrib. 27, nom. nud. (1939), var. nov.

Haec varietas a forma typica speciei recedit floribus majoribus et cymis brachiatis.

This variety differs from the typical form of the species in its large flowers (the corolla-tube 7--8 or more mm. long, its limb about 10 mm. wide) and brachiate cymes, the cyme-branches often to 2 cm. long and very divergent.

The type of this variety was collected by Gustav Wallis (no. 64) on the Rio Branco, Amazonas, Brazil, and is deposited in the herbarium of the Botanisches Museum at Berlin.

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PHYTOLOGIA is financed entirely by its contributors, each one paying in advance for the entire cost of printing, binding, and distributing his contribution. All money received from subscribers, after the expenses of collection have been deducted, will be distributed among the contributors upon the completion of a volume, in proportion to the space which they have used. Each contributor is therefore a shareholder in the magazine, assuming his part of the expenses and sharing in the profits, if any accrue.

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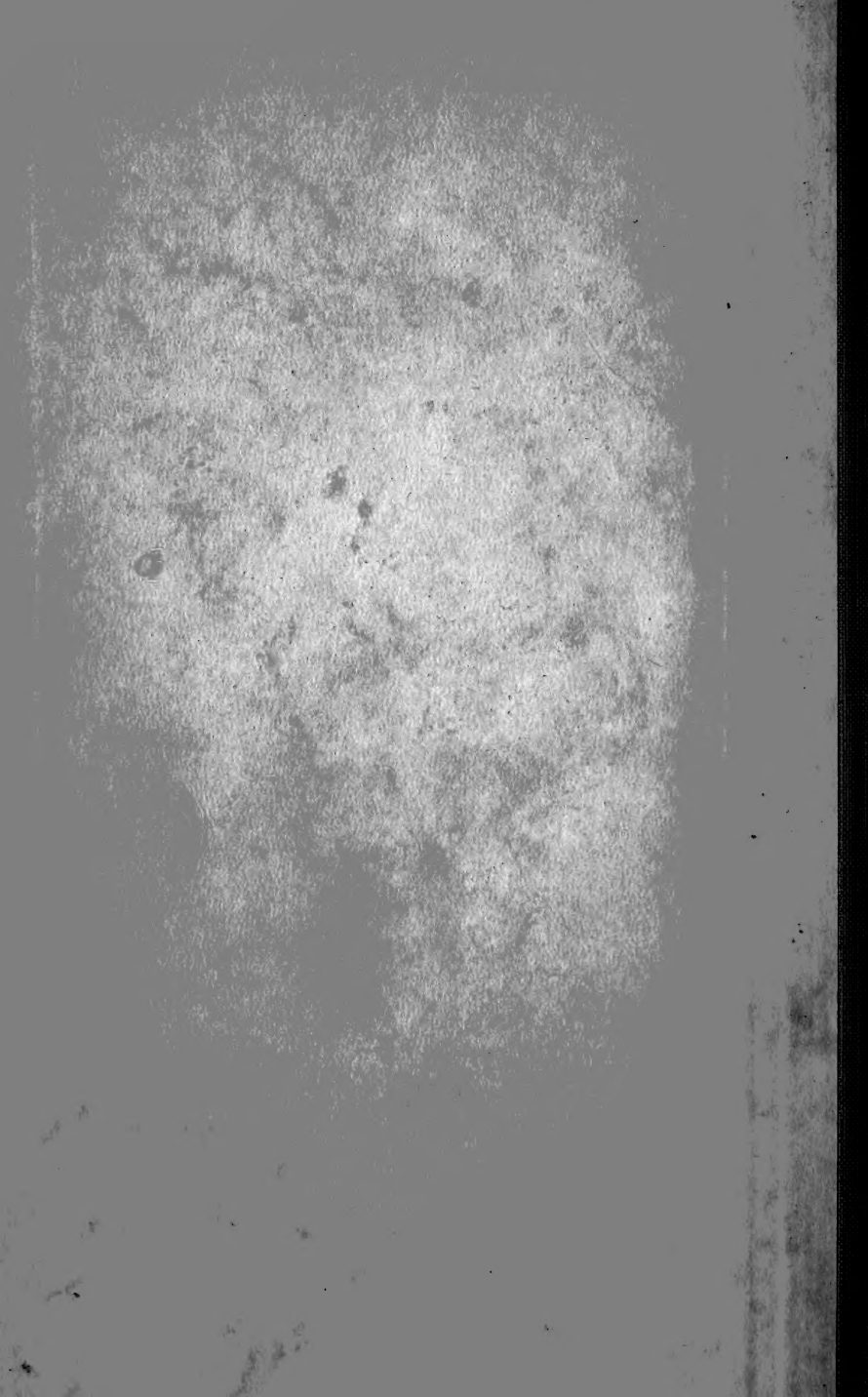
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